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ART. I.—*Observations on Cancrum Oris, as it appeared in the Cincinnati Orphan Asylum,* from February, 1842, to May, 1847. By THOMAS CARROLL, M.D., of Cincinnati.

Cancrum oris has probably existed from time immemorial; we, however, can only trace its history to the times of Van Swieten, it being first noticed by him, since which period authors have occasionally mentioned it; but special attention has only been paid to the matter by writers within the last few years. From these we learn that it has mostly been found in low, damp, or marshy situations, and where children have been much crowded together, as in the various charities reared expressly for the reception of orphans, or in the very densely populated parts of cities. It has also been observed that the badly fed, the badly clothed, and the emaciated, from whatever cause, are but too often obnoxious to its ravages It seems, too, that children under the age of ten years have been almost alone subject to its attacks. It has been observ-

ed as far north as Sweden, and in northern Germany, Great Britain, etc., but never, so far as I know, within the tropics.

No season of the year is exempt from its visitations, though its fatality is no doubt greater in warm than in cold weather, and in the former it prevails more extensively than in the latter. Indeed, when it does exist during cold weather, it often has had its origin during the preceding summer or autumn. But of all the causes which produce this horrible disease, none has hitherto been so prolific in its production, either in Europe or this country, as the crowding together children of a tender age in large numbers, as in asylums or hospitals. Indeed, so far as my observation has extended in the investigation of this disease as it has appeared at the Cincinnati Asylum, I am impelled to the belief that the most devoted attention, the best directed arrangements, the most wholesome food and the most comfortable clothing will not altogether prevent the disease in institutions of the kind, particularly among children under four years of age.

According to my apprehension, the leading predisposing causes in this climate are malarious in character, for I have never seen the affection in localities where remitting and intermitting fevers did not exist. Should this prove to be a truth, an important avenue to relief will be found, as it would then be obvious that immediate removal into an elevated and nonmalarious locality would be among the best means of cure, and should always be the first resorted to.

But as it is my only object to speak of cancrum oris as it has been presented to me at the Cincinnati Orphan Asylum, I shall mostly confine myself to this object, unless it be by way of illustration. I shall therefore begin with a description of the house and its locality, with observations on its malarious situation and some other causes that have led to the disease.

The establishment is situated in the northern part of the city, on the east side of the Miami canal, and within a few hundred feet of it. It is in an open space of considerable extent, and from this fact it would appear that the diseases incident to the city population would have but little influence in

producing corresponding affections, particularly those growing out of the crowded and too filthy condition of some parts of the city.

The house contains about twenty-five apartments, which are mostly large and well constructed for ventilation; those in the basement are in some respects an exception, but dampness is more injurious in them than anything else. In this story alone are the kitchen and dining-room, with other apartments not designed for the use of the children, and therefore can have but little influence on their health.

The dormitories, with the exception of that belonging to the nursery, are situated in the third and fourth stories. So soon as the children leave these rooms in the morning, they are opened and continue so throughout the day; but at night they are either partially or altogether closed, according to the condition of the weather; and the rays of the sun are prevented from entering the apartments by Venetian blinds. In the nursery and dormitory connected with it these regulations also prevail. This dormitory is large and would hold many beds; there are, however, in the general not more than fifteen, which are single and are kept in the best possible order. The children when they dress in the morning are taken into the nursery, and then the windows of the room are opened, and ventilation is continued throughout the day. The children are not allowed to return until they retire for the night. Both these rooms are heated by stoves, and occasionally by heated air. They are kept without carpets, to avoid the accumulation of animal excretions. Carpets were used, but soon after my appointment I discovered that much filth necessarily accumulated in them, which could not be prevented by any means short of removal. And further to secure these rooms against fetid or hospital smell, the chloride of lime in solution or the fluid chloride of soda properly diluted was used occasionally during several summers with a happy effect. The latter seemed to answer a better purpose than the former.

Thus none of the rooms have been occupied more than twelve hours out of the twenty-four, and ventilation and

cleanliness have been particularly attended to, with a single exception, which is the sick-room. That has hitherto been almost constantly used from week to week for the same melancholy purpose, and in not a few cases, I think, with a most unhappy effect. That the sick should be removed from one ward to another every twelve hours, I have no doubt; this regulation would allow a complete ventilation of the domicils of the sick, and would confer on them what is always essential to health, pure air. It has long been my own habit when sick to use two rooms, removing from one to the other every few hours; and nothing has seemed to tend more to comfort than this, and in a few instances appeared to lay the foundation of recovery.

With regard to this matter, I fear there is not a hospital in the world which is rightly managed; for I believe that almost everywhere the unfortunate inmates spend day after day in the same wards, and but too often die in the contaminated air which has been for months or at least weeks mixed with animal effluvia.

It may here be proper to observe that the diet of the inmates has always consisted of mixed kinds. Those over the age of two or three years are allowed animal food at least once a day, such as beef, mutton, etc. Milk and various kinds of vegetables are also admitted, with molasses, weak coffee. etc. In the nursery, milk and bread, sago, arrow-root, with, occasionally, soup, are mostly used.

From the foregoing it might be inferred that but little room for the vitiation or impoverishment of the fluids could at any time have existed, and therefore that little could result from this cause calculated to establish that peculiar irritation which terminates in cancrum oris. Yet we find that it is more frequent here than in the city or neighborhood. This frequency must in some degree be attributed to the fact, that children are often admitted who have been badly taken care of, badly clothed, and badly fed. Management of this kind not only leads to debility, but is the nursery of various species of cutaneous diseases and bowel affections, which not unfrequently

are the indirect cause of ulceration of the mouth. The children of vitiated parents are occasionally brought into the house about the time of the death of one or both parents, or sometimes these diseased persons throw their offspring on the world within a few hours, weeks or months after birth. Of course they soon linger and die, and sometimes become affected with gangrene of the mouth before death. The children, too, of the consumptive or of those laboring under general scrofula very often find their way into this establishment.

Again, children are admitted from different parts of the world, and that, too, before any acclimation could have taken place. The foreign emigrant reaches our city in poverty and laboring under disease; he dies and leaves his children to the charity of strangers. But not only the foreign emigrant, but the American who has left the home of his fathers in the east, and has fixed his residence somewhere in the malarious regions of the west, is overcome by the hardships and unhealthfulness of his situation; he dies, and his children, by the charity of a friend, find their way back thus far towards their father-land. These not unfrequently reach the asylum in the most wretched condition, both as regards health and clothing.

Those children who have been admitted from the malarious situations of the southwestern States are peculiarly obnoxious to cancrum oris. Indeed, that peculiar species of anemia which those regions produce in children of a tender age renders them peculiarly susceptible of the disease under consideration. But it is not uncommon to find ulceration of the mouth at the time of admission, especially in those laboring under diarrhea, which will be further noticed by and by.

Out of more than a hundred annual admissions, there must of course be many admitted laboring under chronic diseases.

The cancrum oris appeared early in the asylum, but its first serious visitation, I think, took place in 1837, in conjunction with measles or immediately following it. The number of deaths resulting from the disease at that time I cannot state, but have understood that the mortality was severe. At the time of my appointment in 1842, there were but thirty-eight

inmates in the house; about ten of these were under three years of age, and of course were in the nursery. The number, however, before the end of the year rose to sixty, and since January, 1843, there have been between sixty-five and one hundred.

During the years 1842 and 1843 there were twenty cases of cancrum oris, of which two proved fatal. All or nearly all of them labored under chronic diarrhea during the period of sloughing; indeed, the two cases which proved fatal had chronic diarrhea for many weeks before the gangrenous condition of their mouths supervened, and only seemed to succumb to the general consequences of that disease. Although there was sloughing of the cheeks internally and of the gums, yet the cheeks were not penetrated by the mortification at death.

This affection has not proved fatal in a single case in which it has appeared as an idiopathic disease; it might therefore be claimed as only fatal when caused by other and more formidable affections. This indeed appears to me to be the way in which it must be viewed in coming time by the medical philosopher, particularly when it assumes its graver aspects.

In the Cincinnati Asylum its grave character was mostly felt when following measles or some other cutaneous disease: then danger was to be apprehended, and especially when connected with measles.

In some instances it followed remitting and intermitting fever. A case of this kind occurred in 1844: A boy five years of age had remitting fever, and was convalescent on the 1st of April; but on the 24th, some small ulcers appeared in the mouth, and the gums were inflamed and dark colored, with slight ulceration. The patient, however, recovered in a short time by the usual treatment. Aside from this case, two others came down from 1843, both of whom recovered. No other cases occurred during 1844, and it may be stated that unusually good health prevailed throughout the year, there being but three or four fatal cases in the house.

To convey a just idea of the influence of eruptive diseases in the production of cancrum oris, I shall now give a short

history of them as they have appeared in the house during the time under consideration. The varioloid appeared in December, 1843, and continued until some time in January, 1844. Out of thirty-eight patients, which constituted the whole number, all recovered, and none of them were marked; but what was strange to me was, that this affection left no disposition to cancrum oris in any case.

During 1845 there was more disease of various kinds in the house, and more cases of cancrum oris. The varicella made its appearance on the 15th of January in a single case, and in four others on the 18th. After this a number of cases took place and interlocked with the measles, which was manifested on the 21st of February, and continued in the house until May. Ten fatal cases occurred during this time. Immediately preceding the occurrence of the measles, the whooping-cough had existed and had produced an unfavorable state of the system in some subjects for the reception of the measles, and appeared to be the indirect cause of death in a few instances.

On the first appearance of the measles, the patients seemed to do well; but during the month of March and part of April the weather was cold and dry, the atmosphere having that kind of constitution which is generally complained of during that season of the year. Probably this condition had a tendency to make the measles, during the time of its recession, have an unfavorable influence on the mucous surface of the alimentary canal; for in most of the cases it became much irritated, congested, and, in the lower bowels, intensely inflamed; for although diarrhea first supervened, dysentery soon followed and became unmanageable in nearly all the fatal cases. With these symptoms were soon united loss of appetite, quick pulse, and inflammation of the mucous membrane of the mouth. This latter symptom was accompanied by swelling of the lower part of the face. Had the weather been as warm as it was when the measles visited the house in 1846, some of the patients would no doubt have had sloughing of the mouth; but the coolness of the atmosphere appeared to

prevent that excessive inflammation which terminated in sloughing during 1846; while the mucous membrane of the large intestines suffered a most intense inflammation, which would probably not have been the case had the weather been milder. Although six of the fatal cases succumbed directly to the measles, yet it was my opinion at the time that all these would die during the then coming summer. Three of them were laboring under chronic diarrhea, and the other three had congenital syphilis, which was rapidly destroying its victims. As has been observed, these six patients all took the measles, but not until they had been some time in the house, for it seemed that a great concentration of the poison was necessary before they could be brought under its influence. The mouth of one of the three last named became badly ulcerated before death.

From May until June no epidemic skin disease occurred: there was, however, in July one fatal case of cancrum oris, and one other that recovered. During the autumn of this year five cases of cancrum oris occurred, though of rather a slight character. These cases improved under treatment, but three of them remained in a slightly diseased state until the invasion of the measles some time after.

On the 24th of December, 1845, scarlatina made its appearance in a child ten years of age, but a month elapsed before another case supervened; and from that time until the 25th of February, twenty-five cases occurred; of this number but one died. In conjunction with scarlatina, the varicella existed in a few cases. The foregoing shows the amount of eruptive disease previous to the month of March, and demonstrates how little the varicella and scarlatina did in the way of producing sloughing of the mouth. This further shows that in the asylum measles has been the only epidemic which has obviously caused cancrum oris.

On the 24th of March, twenty days after the last case of scarlatina, a child about four years of age was found to have cancrum oris. There was a slough on the inside of the lower lip near its junction with the jaw, and the glands in the neigh-

borhood were swollen and tend. to the touch. There were also two other slight cases which entered the following month, showing, as has been observed, that there were two cases less than in December, 1845; these three, however, were of the five of that month. One had recovered before May, but was retaken, and in the other two the ulceration had been continued in consequence of chronic diarrhea. These cases eventually proved fatal because of the supervention of the measles, which broke out in the house on the 14th of May.

On the 10th of May a child was admitted, who on the 14th sickened; and on the 21st another inmate had catarrhal symptoms, which resulted in the eruptive stage of measles on the 24th. After these, thirty-five other cases made their appearance before the middle of July. In 1845 there were seventeen more cases, yet the mortality was less than in the following year.

During the months of May, June and July, there were seventeen cases of cancrum oris. Three of them came down from the preceding months, and four of them still existed in August. Out of these, ten succumbed, all of which had the rubeola either before the sloughing began or during its progress.

Before entering on the symptomatology of this affection, I shall make a few further observations on those circumstances which render individuals liable to its attacks. In the first place, all those who are anemic are obnoxious to the affection, and are especially so when diarrhea is present either in its acute or chronic form. In the second place, those who are in a state of hyperæmia not unfrequently take the disease. This class comprehends all the robust who are great eaters, and whose muscular action is slow, and who possess most of the other characteristics of the phlegmatic temperament. In this species of constitution skin diseases of a chronic character are apt to exist, though it may be said with equal truth that those temperaments bordering on the sanguineous are almost as subject to those affections; and probably in this mixed temperament cancrum oris appears as often as in the former. And

in the third place, as has been noticed, those who have been subjected to malarious and damp situations, or who have been enveloped much in filth, are more subject to the disease than those who have come into the house under opposite circumstances. But in the fourth place, that class who have by nature a tendency to scrofula, or who have it in a state of development, are apt to have the disease, and, above all other classes, are most likely to die. Of this more will be seen by and by.

In giving the symptoms of this affection, I shall simply describe what I have observed, as I have noticed no description which meets exactly what I have seen. In most instances there has been either constipation or diarrhea to a greater or less extent, and the alvine evacuations have been unusually offensive and not of proper color or consistence. There has often been fullness of the abdomen, and in the more serious cases there has been sallowness and emaciation, with sometimes a bloated condition of the face and extremities even before any tendency to sloughing of the mouth had been observed; yet those of a full habit, as has been noticed, under certain circumstances have been subjected to it, though to a much less severe degree.

It may be best for the sake of perspicuity to divide the disease into acute and chronic, though there is not in fact much foundation for such a classification. It is true, however, that the disease runs its course in a few days in not a few instances, while at other times it continues for weeks or even months. This latter occurs in those cases which might be considered idiopathic.

In the chronic form, the first local symptom is generally observed in the gums, in either the upper or lower alveolar process, and on only one side—it being a pretty general law, that it is found only on one side, though, as will be hereafter seen, there are deviations from this apparent law. The affected gums are mostly connected with but two teeth, and are of a dark red color, with occasionally a white band round the tooth, which soon appears started from it; this increases for

a short time, when it ulcerates and is still further separated from the neck of the tooth. The inflammation travels toward the connection of the lip or cheek or gums, but does not, as might be expected, travel up the mucous surface of the cheek, but stops short. An ash-colored spot now makes its appearance a little back of the angle of the mouth and in the centre of the mucous surface. This spot is often half an inch in length, and the width is generally about half the length. To this there are exceptions, as it is not unfrequent for two or three round ash-colored spots to be scattered along the mucous surface from the angle of the mouth back; sometimes there is but one of these. A dark red-colored areola surrounds each of these spots, which are in an inactive or congestive state. When one of these ash-colored spots is felt, it is found to have a hardened base which extends beyond its edges, or, in other words, is larger than it is. This solidified spot often involves the cheek but partially, but in some cases it penetrates through the lip or cheek, and is found on the outer side, solid and smooth at first, but after a little there appears a red spot on the skin. When this involution of the skin takes place, the most serious consequences may be anticipated. After it has arrived at this point, and even before, the face swells considerably, particularly on the side affected. Now the hardening with redness gradually extends, and the slough internally has gradually extended, and instead of keeping on a level with the surrounding surface as hitherto, it drops below, becomes darker and more rigid; and the tendency to gangrene of the cheek is evinced by increased hardness and extending solidification. The inflamed spot on the denuded surface may be confined within a narrow space, or may extend over a considerable portion of the cheek; either in general proves equally fatal. But to return: The mortification of the cheek or lip, when once begun, preceded by the swelling and inflammation, spreads—if in the lip, in all directions, but if in the cheek, more rapidly upwards. The angle of the mouth or edge of the lip is not for some time involved. It would seem that the

vitality of the lip longer resists the morbid action than the surrounding parts.

After the solidification has passed through the cheek, which may take place within the space of a few days or be extended to a week or more, its inflamed centre becomes a dark spot, which within twenty-four hours after is a third of an inch or more in diameter. After twenty-four hours more, it has doubled its size, and its surface now sinks below the surrounding parts, and appears over the surface dry, and does not seem large enough to fill the space, but is slightly disposed to separate from the still living tissue. The mortification continues to extend, and generally seems to delight in the more fleshy parts of the cheek. The patient now has increased thirst, which has hitherto been great. He often heaves deep sighs, and has increased frequency of breathing, with considerable fever during the after part of the day, and occasionally has slight chills in the morning. At night, and indeed during the day, he tosses himself from side to side, and has delirium; this latter symptom is not very often present during the day.

He now cannot be prevailed upon to open his mouth, and carefully avoids stretching the narrow slip of lip through which the mortification has not yet penetrated, but swallows as though there was no danger. The lip, however, gives way, and the most frightful aspect of the disease is now unveiled. The child still talks, and, if several years old, speaks with composure of its approaching end, and when not delirious is pathetic and resigned. After the patient has arrived at this point, he may survive some days, or, indeed, it is possible for him to recover, though this seldom happens.

But we must return and trace other symptoms within the mouth, etc., for the disease does not always appear in the garb above described. It sometimes first shows itself in the gums of the upper molar teeth, and not unfrequently in those of all the upper teeth between the molares, as I have sometimes observed in the gums of a single cuspidatus or bicuspidatus, and spread from thence. Occasionally the gums of the upper or lower incisor teeth become first involved; and in a few in-

stances I have seen those of both the lower and upper simultaneously affected, but only in malignant cases following measles. Three of the latter character took place in July, 1846; in these diarrhea supervened at the close of the eruptive stage of rubeola; their appetite was lost during the measles, and did not return; not even the slightest amount of nourishment could be borne, and there was constant thirst without the power of retaining drink; the surfaces were cold, or rather below the natural warmth; while the pulse was in power too weak, and too frequent.

When I first examined the mouths of these patients, I found the gums had an ash-colored appearance; the incisor teeth were even now loose, and within twenty-four hours they began to drop out. One of these patients Prof. Harrison saw with me in consultation; the gums were then swollen, and of a slightly venous color. Eighteen hours afterwards, when I again saw the patient, the gums had separated from the teeth and the teeth were loose; in thirty-six or forty-eight hours more the patient succumbed. When this child took the measles, it was in bad health and its constitution was of the most delicate kind. Its parents had resided somewhere in the State of Mississippi, and had long labored under malarious influences; the children being born in that country and under those influences, were of course delicate and were remarkably slender. One other of this family fell a victim to this disease.

This sudden separation of the gums from the teeth brings us to another condition of this affection, which is twofold in its character, and widely different from that which alone affects the soft parts:

Where a confined or quite limited ash-colored slough forms around the root of one or more teeth and penetrates to the alveola, and the teeth become loose, a different set of symptoms make their appearance, and are, in most of the cases which occur, added to those which have been described. In acute cases often in a day or two, the teeth become loose and are easily plucked out by the fingers; but in the less

acute forms several days may elapse before this will take place. After the teeth have come out, the alveolar process comes to view, and is of a dark brown or black color. After the loss of the teeth, the gums soon become more healthy in appearance; indeed, I have seen them in at least two instances become quite healthy looking. From this it would seem that their separation from the periosteum had relieved them from disease for the time being, and would go to prove that the affection had begun in the immediate covering of the bone. But this diseased condition of the periosteum and bony tissue is not wholly confined to the alveolar process; it spreads more widely, runs up the bones of the face, reaches the orbit, and dips into one or both antra, and in some cases attacks the bones of the nose, causing a most horrible ozæna. This latter symptom, as will be seen, may last for many weeks, and the patient eventually recover, though, if in the vomer, with a deformed nose.

To give the reader a more accurate idea of this malady in cases where the periosteum and bony tissue are diseased, I shall report the following case, and shall relate another when I come to the treatment:

A girl ten years old had been admitted, with three others of the same family, some weeks before the 30th of May, 1846. She had fair complexion and light hair, and was tall and slender, with apparently feeble muscular power. On the 30th of May she took diarrhea, for which was prescribed one-twelfth of a grain of calomel and half a grain of Dover's powder, with five grains of prepared chalk, every eight hours. This did not check the diarrhea, and on the 1st of June she evinced symptoms of measles. Her eyes were much inflamed, which was soon after followed by the eruption of the measles, which went through their regular stages, notwithstanding the unabated continuance of the diarrhea. To relieve this, I directed Hope's mixture in teaspoonful doses every few hours. During the continuance of the measles, severe cough with bronchitis was present, though not in an alarming degree; but on the 9th these symptoms were worse, and there was added severe

pain in the chest, and with the expectoration were mingled large quantities of blood. As the pain was in the right side, a blister was ordered on that part, and antimonials were given as freely as the stomach and bowels would bear. On the 10th she was much relieved of pain, and the bloody expectoration was diminished; she, however, continued to cough; the skin was now cool and the pulse more regular. During this time the diarrhea remained unabated, or at least had not subsided; Hope's mixture was continued. As the cough still existed, on the 11th ten drops of laudanum were ordered with the other medicine, by which she was much relieved through the night. On the 12th she had improved much, but was unfortunately directed to take one or two small portions of brandy, on account of debility; this rather invited a return of fever than relieved the weakness; the cough seemed to increase, and the diarrhea remained unsubdued, though not severe.

On the 15th, about fifteen days from the first appearance of the measles, the gums began to ulcerate or slough around the last incisor of the right side, the ulceration running back until the gums of the two adjoining teeth became involved. The hæmoptoe still continued on the 16th and 17th, with evidently undiminished congestion of the right lung; but on the 18th there was no bloody appearance. On this day the sloughing had extended to the gums of all the upper incisor teeth, and the bone had become bare for some distance up, involving the whole depth of the alveolar process. The solid nitrate of silver was applied to the sloughing parts, with a wash composed of water and the muriated tincture of iron, which in my absence was prescribed by Dr. Conner. Under this treatment the soft parts much improved, and eventually looked healthy, but the affection of the periosteum still increased in diseased appearance; all the incisor teeth had become loose, and were soon picked out by the patient.

At this stage of the disease the lips were intensely red, and the upper one was swollen. The weather was warm, the mercury being up to 90°, which condition seemed much to enfeeble the patient. Her pulse had all the time been over

100 per minute, but now beat 140 or more, and was more feeble; during the after part of the day she had more fever, and at night was slightly delirious.

From this period until the 28th there was no increased sloughing of the soft parts, except where they were in connection with the periosteum; there they were loose and gangrenous, and the bone had become much more denuded. The right side of the face had much increased in swelling, so that on the 29th the right eye was nearly closed, and the upper lip on this side was solidified, with but little redness; the left side of the face participated slightly in the swelling. Mortification began on the 1st of July in the hardened lip, and by the evening of the 2d it had considerably extended. The emaciation by this time had become very great, the pulse was much sunk, and there was constant restlessness. She died on the 3d. At the time of her death the whole of the upper alveolar processes had become black as far back as the last molares; all of the teeth but these had come out. The sloughing and periosteal inflammation had run round the last molar tooth.

About eighteen hours after death I sawed out the upper alveolar processes. The saw passed through the antra, which were found filled with a black and semifluid matter, the result of gangrenous action; this was particularly the case in the right one, the other being affected in its osseous lining in a much slighter degree; the former was black, the latter brown. On the right side the soft parts were separated from the bones to the edge of the orbit, but on the left the separation had not extended more than half way. The cancellated substance of the jaw was filled with dark matter, or had a dark color when cut through; this diseased condition was much less than that of the external covering.

But we have still to notice the pathological condition of the mucous surface and of the glands of the mouth. The latter in some instances secreted largely, while the former only occasionally secreted more than usual if as much. Indeed, more danger may generally be apprehended where the mouth is dry than in its opposite condition. There are occasionally

about the onset of the affection small ash-colored spots on the point of the tongue, and on one or both edges; these spots are tender, and the tongue swollen, especially in their immediate neighborhood. This state of the mouth does not, however, belong to chronic cases accompanied with diarrhea, or where there is much debility, but rather to those in which there is plethora or hyperæmia, and where the affection is of an acute character.

In one instance I observed one-half of the roof of the mouth swollen and inflamed, which latter became more intense as it ran back, and only terminated when it reached the fauces. In this case the inflammation terminated by resolution.

The glands of the fauces with the submaxillaries occasionally became involved in this sloughing gangrene, without either the gums or lips being affected; yet there can be very little doubt of a close connection if not a positive identity of the two diseases. The following case will go to show how this affection operates when located in the fauces and glands:

A boy twelve years of age, a son of Dr. Belknap, now of Iowa, was taken with the measles some time in June, 1846. He got through them pretty well, but imprudently exposed himself to rain just at the close of the recession, and was taken with remitting fever. He lay in the fever two weeks, and suffered much with pain in the head, delirium, etc. The treatment was to some extent mercurial, with warm sponging, etc. When he began to recover he was quite feeble, but soon sat up, took food pretty well, and it was hoped that a perfect convalescence would ensue; this, however, did not take place. Within a few days he began to complain of his fauces, and had a hacking cough; the tonsils swelled, as well as the surrounding cellular membrane and the glands in the immediate neighborhood. In a few days abscesses formed in the tonsils and in the cellular tissue in the neighborhood, which now burst one after another, and discharged a most fetid matter, thick and dark-colored; some of the mouths of these abscesses could be seen, and had a ragged aspect. The patient emaciated rapidly, the skin became dry, and the cough was trouble-

some. Under these circumstances he died within a few days after the bursting of the first abscess.

Twenty-four hours after death I examined the body in the presence of Dr. Dodge, of this city, and the father. We found all the soft parts of the fauces in a gangrenous state, even the root of the tongue being involved in the mortification, and the mucous membrane covering the glottis and epiglottis, as well as that dipping into the larynx, thickened and dark. The lungs, which some had thought deeply implicated, were found healthy, without even an evidence of congestion.

Professor Drake saw another case with me in the same family, which it was feared might result in the same manner as the first; but there were no abscesses formed, nor was there any sloughing. Prof. D. gave it as his opinion, that in cases of mortification of the mouth following measles there was a close relation with epidemic erysipelas of the face, etc.

It may not here be improper to make a few observations on the difference of diagnosis between cancrum oris and that sloughing affection which sometimes follows the use of mercury. Although there has not been a case in the asylum since I have attended it which obviously grew out of the improper administration of this mineral, yet I have at different times seen this mercurial disease, and have examined it with some care. In a majority of those cases a marked difference existed between them and cancrum oris, at least so far as regarded the diseased condition of the osseous tissue. In the latter it has been seen that the periosteum became affected before the substance of the bone, and was not stationary, but ran like the continuous inflammation of the mucous tissues, only with less rapidity; but in the former the substance of the bones suffered more intensely than their immediate covering, although they both seemed to be implicated.

I have now before me a specimen which I took a few years ago from a living individual of this city, which consists of the two anterior molar teeth of the right side of the under jaw. The cancellated portion of the bone in this specimen appears to have been more deeply affected than the harder parts or

the periosteum. The teeth are now only slightly loose in the bone, but on the inside the cancellated structure is much destroyed; yet the part approaching the alveoli is the most perfect, and there still remains a shell covering the fangs of the teeth, which, however, is not perfect. The dens sapientiæ had made its way to the surface of the alveolar process, but the bony covering on the side adjoining the tooth came out and left it with a healthy appearance, and it continued in the jaw afterwards.

On the external side of the specimen the gums adhered at the time of its removal, though the adhesion was not perfect. The line of separation of the part removed was bounded by the base of the antrum which was connected with the part removed. The bicuspidal tooth of that side came out, as more than half of its socket had been absorbed.

In this case suppuration had existed for some months before the bone and teeth were removed. Salivation had been produced eight months before, but the patient had only been confined for the last four months, during which time the pus found an outlet around the loosened bone; the discharge was profuse and caused much debility. Within a few hours after the removal of the bone, the patient, who was sixteen years of age, was relieved of all pain; his recovery was rapid, so that within about three weeks afterwards he was cured.

About the year 1830 I was consulted with regard to two other cases which followed scarlatina, but which were obviously the result of large doses of calomel administered not only during the disease, but afterwards. These cases took very nearly the same course as the one just related: the molar teeth of the under jaw, with the alveolar process connected with them, came out, and I believe that in at least one of the cases those of both sides were removed, but not until after the lapse of several months. Now, if these cases had resulted from cancrum oris, the periosteal covering would first have been inflamed, the teeth would have been picked out within a comparatively short period, and the bone would have been

entirely denuded of soft parts, and black. Such was not the result in any of these cases.

Where mercury commits ravages on the soft parts, both sides are usually if not always affected equally, and internally there is little difference in either side, as the inflammation of the mucous membrane is pretty equally diffused, though I believe it is not unusual for one side to be a little more affected than the other. In cancrum oris the matter is very different: here the inflammation is but seldom equally diffused over the surface of the mouth, and the face suffers on but one side, and often in but one lip. Instead of all the gums being inflamed, those of but a few teeth are affected, and the color is darker at the outset. These, indeed, seem to be important facts in the diagnosis, for it scarcely ever happens that all the gums even of one jaw slough from this affection.

In two cases of sloughing of the face from the improper use of mercury which have come under my observation, both cheeks sloughed at the same time, which was to me an evidence that mercury had been the cause. This, however, needs further observation before it could with safety be relied on as a rule.

Treatment.—Observation soon led me to the conclusion that in cancrum oris the mucous surface of the whole alimentary canal was implicated. There was either diarrhea, as has been observed, or constipation, or at least a vitiated condition of the alvine evacuations, for they were very offensive in nearly every case, and were not of a proper color or consistence. Of course the treatment must necessarily be governed by the condition of the general system. In the chronic forms of this disease we will separately notice that which occurs in the plethoric first, and then that which is connected with emaciation, etc.

Where, in these plethoric cases, there was fullness and tenderness of the abdomen, and offensive evacuations with slight disposition to constipation, and also where the mouth was rather disposed to run than to be dry, my course was to give

an emetic either of the tartrate of antimony or of ipecacuanha. A teaspoonful of antimonial wine was given about every thirty minutes until emesis resulted; when ipecacuanha was directed, ten grains were given and repeated, but when this did not produce vomiting, no more was administered. I then let the medicine act as a cathartic, which it generally did within six, twelve or twenty-four hours. In cases where it failed, I directed one grain of calomel with ten or twelve of jalap to the larger patients, and less to the smaller ones. This was repeated every few hours until pretty free evacuations were brought about. After the first evacuations, oil or magnesia was occasionally given; calomel and jalap were, however, mostly depended on in plethoric patients, and I think generally did better than any other cathartic.

The treatment of the mouth next demanded attention, and this at first was much more mild than after I had had some experience. I began by using a gargle of three grains of nitrate of silver to an ounce of distilled water, with which the mouth was carefully washed every four or six hours. I soon discovered, however, that this solution was too weak, and that one with ten grains to the ounce answered a much better purpose. Rubbing was not allowed in the application of any wash. Once or twice a day was considered sufficient for the last named solution to be used.

But I found that where slough was present, with considerable inactivity of the connecting vital parts, a still more active application was needed; I therefore applied solid nitrate of silver around the slough, which seldom failed to excite a more healthy action. The mere application of the caustic to the surface of the dead parts could of course be of no use; but when they were broken up by a pencil of the nitrate, and it was brought directly in contact with the living base, it must necessarily have an effect for good or evil. There is no doubt in my mind that it was beneficial in a very large proportion of cases. The pain produced by the application lasted but a few moments, and was succeeded by a more agreable sensation than had been felt previously. Experience taught that gene-

rally the caustic could not be beneficially applied oftener than once in forty-eight or seventy-two hours, and that sometimes even longer intervals were necessary. Usually within twenty-four hours after the application, the zone surrounding the slough assumed a more healthy appearance, and not unfrequently the slough dropped off or disappeared before the end of the third day. Between the applications of the solid nitrate the solution before mentioned was used once a day or even less often. This was done to prevent those unhealthy congestions which preceded sloughing or ulceration.

When the gums were in an ulcerated or sloughing state, the solid nitrate was run over them until they bled slightly. This generally did well, but a pretty strong solution was usually sufficient. But for this affection of the gums, as well as for the sloughing of other parts, another remedy had a great influence and is now a favorite application in the house; this is the fluid chloride of soda. I at first directed it with eight additions of water, but for some time past have used only three or four parts of water. It was then applied every six or eight hours over every part of the surface of the mouth, but latterly it has been used more frequently. In the very worst forms of the disease it at once destroyed the fetor, and, except in the incurable cases following measles, had a happy effect in disposing the affection itself to disappear. Indeed, in a few recent cases which have appeared in the house, no other local application has been used.

Other remedies were tried at various times, but mostly when there was little or no chance of anything being useful. It has been stated that Dr. Conner prescribed the muriated tincture of iron in one case, and that it had no useful effect; but it will have been seen that no means could have been of use. Further trials must decide the benefit that may be derived from this article, and I think it will be found useful in ulceration of the mouth even where there is sloughing. Dr. Dodge recommended diluted nitrous acid; but I did not adopt his idea of the matter, because I preferred the action of nitrate of silver. This preference was founded upon the fact that

the animal fluids have less power in neutralizing the action of nitrous acid than that of nitrate of silver, and that therefore the caustic power of the former might prove injurious to parts possessing little vital action. Prof. Harrison called my attention to another prescription—sulphate of copper, Peruvian bark and alcohol; this I used in the case which the professor saw, but with no good effect. I must acknowledge, however, that the case was a very bad one. The gums were only moderately swollen when Dr. H. saw it, but in eighteen hours they had separated from the teeth, which were loose and soon came out; and the patient did not live more than two days after the doctor made his visit. Prof. Drake informed me that he had seen cancrum oris cured by a solution of carbonate of potassa; but I have no experience myself, and of course cannot decide as to the propriety of its use. I, however, many years since adopted this medicine as the very best in malignant sore throat, and in all cases of ulceration of the tonsils it was long my practice to prescribe it in weak solution: but a gargle of the nitrate of silver has nearly superseded all others in my more recent practice. Yet I am not certain but that I was as fortunate with the former as with the latter remedy. But after all, the nitrate of silver, either in substance or solution, stands first in my estimation as a local remedy, and next to it the fluid chloride of soda, and then the various astringents, either vegetable or mineral. The latter should be used with moderation, taking care that a few hours should elapse between the applications.

We must, however, return to the point where we left off the consideration of the constitutional treatment, and further pursue the steps that have been taken in the asylum. When patients were laboring under the chronic form of the disease, connected with emaciation and debility, I have found nothing equal to sulphate of quinine as a tonic; it has proved particularly beneficial in cases where regular or irregular chills were present, followed by fever. There is now, while I am writing, a case in the asylum that will serve to show the influence which this medicine occasionally has:

A male child three and a half years old was brought into the house three months ago, and at that time was emaciated almost to the last degree. Fever came on every afternoon, preceded by cold fits or chills; the skin for many days was dry, and the pulse feeble and frequent; the alvine evacuations were too light colored and offensive; much of the hair seemed to have been broken off near the scalp, and the scattered remnant had lost its original pliability and softness. Under these circumstances it became necessary to administer not only tonics, but alteratives; I therefore directed two grains of rhubarb with one-twelfth of a grain of calomel to be given every night for a few times. At the outset, however, ten grains of ipecacuanha were given, which acted as an emetic; this has been repeated five times. Quinine was very soon directed, and early gave evidence of doing great good in the case. Half a grain dose was given three times a day for some time, with the happiest effects: the skin became softer, the chills soon disappeared, the appetite returned, the emaciation began to disappear, and the hair resumed its healthy appearance. During this time, warm salt baths were used once a day. Under this course the child has gradually improved.

About the time that he seemed to be rapidly improving, I found that the gums of the upper incisor teeth had slightly separated from them and were ulcerated. This I had for some weeks anticipated, and had therefore given but little mercury, choosing rather to excite the liver by emetics. But as the quinine had been laid aside for some time, I now resumed its use in half grain doses, but oftener than before. Under this course the child soon improved, and now, although there is still some ulceration, he is running about, and weighs several pounds more than he did six weeks since. Fluid chloride of soda diluted has alone been used as a local application, and it has seemed to do well in producing a healthy action of the gums.

It has not been my object to give large doses of quinine in chronic cases of the kind we have been considering, because time is allowed for a gradual removal of the affection. Large

doses not unfreqently disagree with the stomach, and when disorder is once induced it is difficult to restore the organ to its wonted powers. I therefore have mostly prescribed from an eighth to half a grain every four, six or eight hours to children two or three years of age, which has usually been continued during several weeks. Where much debility has existed, small quantities of wine or brandy have been directed, and frequently with good effect, particularly when given with quinine, as then it often caused this medicine to be more easily retained.

During the continuance of the above course, I have in all cases where the strength of the patient would bear it, directed the cold shower-bath or sponging every morning; for the feeble the warm salt dash has been directed once a day or less, according to circumstances. The application of cold water I think has in many instances been of singular service, and should be considered indispensable where the patient appears more lively than usual in a short time after it.

In a few cases which occurred during 1844 and 1845 I tried the long continued use of iodine, on the principles laid down by Lugol. In several patients the general health was improved, the appetite benefited, and the flesh increased; but I was unable to discover any direct influence on the sloughing process. It must, however, from its tendency to invigorate the system, at least in occasional cases, render the gangrene less ready to increase or progress towards a fatal result; and with the aid of proper local applications it will therefore be useful in those cases where weeks must elapse before a cure can be effected.

I shall report two cases in which Fowler's solution was administered with advantage, though the reader may very readily conclude, from the time employed in doing it, that the medicine but slowly caused the disease to retreat:

Two brothers, one eight years old and the other six, from one of the malarious districts of Illinois, were admitted during the autumn of 1843. Both were laboring under cancrum oris, were somewhat emaciated, and withal had a bloated appear-

ance. Each took an emetic of ipecac. and was purged; one drop of Fowler's solution was given three times a day; and the slough and adjoining parts were touched with a solution of nitrate of silver. As their mouths did not improve very rapidly, the arsenic was continued during three months without seeming to have produced its specific effect. Both cases now resulted in a cure.

But on the 8th of March, 1844, both had that kind of fever which so often appears about this time of the year in persons who have been subjected to malaria during the preceding autumn, or who have had fever from their influence. Each was directed to take an emetic with cathartics. The elder got better, but the younger one had an immediate return of ulceration of the mouth. The ulceration extended into the fauces, and the parotid glands swelled considerably but did not suppurate. I now directed one grain of calomel with ten grains of jalap, which acted pretty freely as a cathartic; after this action had ceased I directed two drops of Fowler's solution three times a day. The local application was simply the nitrate of silver in solution. On the 28th of the month, about twenty days after the relapse, the condition of the ulcers had much improved, and all the sloughing had taken place. The arsenic was steadily given for two weeks, and the gargle of nitrate of silver was continued until the 17th of April, when the patient was discharged cured.

In these cases the arsenic seemed to act as a slow and powerful tonic, even without its specific effect being produced—a result that I have often observed on other occasions. Indeed, the most happy effects may be obtained by the use of this medicine without its being given to that extent which is necessary to produce dropsical effusions.

In those forms of cutaneous disease named porrigo, eczema, lichen, ecthyma, and those which come under the appellation of squamæ, more particularly when united with cancrum oris in its chronic form, should generally be treated with arsenic in the way above indicated. This course will mostly do better than any other, and would, if early resorted to, often prevent

cancrum oris. Ecthyma, which has been in the house for several months, was treated by various external applications with some of the common alteratives, but I was unable to remove it except by the arsenical solution, which has now nearly eradicated it.

This would probably be the right place to make some observations on the proper diet in chronic cases; but I shall first consider the acute form of the disease, and then make some statements upon this subject.

Acute cancrum oris is that which generally follows eruptive diseases, or sometimes accompanies them. The chronic form not unfrequently becomes acute upon the invasion of measles or some other dermal affection, though this last condition may rather be considered a chronic affection suddenly rendered worse by conjunction with an eruptive disease. This affection, when it becomes endemic or epidemic with measles, has proved the most intractable of all the diseases we have had to contend with. Indeed, it seems to me that when it is thus connected, it will prove a most mortal disease, and will probably even bid defiance in a majority of instances to every effort of the healing art, especially when it occurs during warm or hot weather. Medicine has seemed to have but little influence in arresting its progress, and one symptom has crowded upon another toward a fatal termination, despite every effort to the contrary.

It is true, that in all instances irritation of the bowels with diarrhea was present, and this irritation frequently resulted in inflammation at least of the mucous surface of the colon. These symptoms were the leading and probably the real cause of death, since, when these affections followed or accompanied measles in the spring of 1845, death resulted in a number of cases where there was no sloughing of the gums or any part of the buccal cavity. At that time there was more intense inflammation of the mucous surface of the bowels than in 1846. The mouth affection then appeared to be but one symptom of the disease, the immediate cause being an unhealthy condition of the fluids. Even the bones owned the deteriorated state

of the fluids by the inflammation of their periosteal tissues, as well as by the morbid condition of their cancellated structure, as has already been seen; this condition, however, is found only in the bones of the face and head. It has already been observed that the acute form of cancrum oris began, with few exceptions, on the decline of the eruptive stage of measles. This sloughing condition of the mouth in all the cases connected with measles was preceded by diarrhea, and, in those which were fatal, continued to their close.

As the congested state of the mucous surface of the mouth seemed to participate in the irritation of the bowels, even if it were not caused by it, I directed early efforts to the subjugation of this affection. The sudden stoppage of the diarrhea was not attempted by astringents, as it was thought that harm must result instead of good. But when this affection could be arrested by the establishment of healthy excretions and secretions at an early period, the cases generally or always did well.

It is obvious to the reader, no doubt, that mercurials could be of little use in diarrhea following measles, where there was already much debility, and where no difficulty seemed to exist in the liver more than in the other abdominal organs. The trials that I made with hydrargyrum cum creta did not fulfil my expectations; indeed, I became satisfied that it was of no use; and as acidity did not seem to be present to much extent, prepared chalk did not have much effect. As there was certainty of inflammation both of the upper and lower bowels in a majority of cases, it became important to arrest it if possible; but here little could be done, for the patients could not with safety bear the application of leeches. In one case, however, a single leech was applied to the abdomen of a child two or three years of age, early in the summer of 1845, by the advice of Dr. White, of this city. Before the application there was tenderness with some fullness of the abdomen. The tenderness was somewhat relieved and the child appeared considerally better for a few days, but it succumbed after two

or three weeks. In this case there was no sloughing of the mouth, but merely a slow inflammation.

Dr. White also directed my attention to the use of Hope's dysenteric mixture, as all the diarrheal cases of 1845 had dysenteric symptoms at the same time. Since that period I have very freqently used this mixture in very nearly the proportions laid down by Dr. Hope: I direct laudanum ℥ss, or sometimes f. ʒij, with f. ℥j of nitrous acid, all added to ℥viij of camphorated water. To a child two or three years of age I have ordered about a teaspoonful every six hours, altering the quantity according to the age and other circumstances of the patient. No medicine has been more useful than this in cases of diarrhea where there has been much debility with ulceration of the gums; it has generally lessened the number of evacuations within twenty-four hours in manageable cases, and in the incurable has at least relieved pain. In these inflammatory cases warm alcohol was mostly directed as an external application, but other substances were occasionally used, such as several kinds of spices combined with flour and whisky or vinegar and water. In addition to Hope's mixture, brandy or wine was directed in a number of the cases that occurred during the summer of 1846.

In those cases where the diarrhea was very profuse, sugar of lead appeared to be more beneficial than any other remedy of the astringent kind, as it seemed almost certain that it would not increase the inflammation. I accordingly prescribed it in a few cases during 1845 and 1846, but derived no benefit in any case. In one the diarrhea suddenly stopped, and the abdomen swelled very much; the patient died under these circumstances, and I therefore quit the use of the lead in cancrum oris with diarrhea.

In the acute condition of this affection, no use could be made of ipecac. in many of the subjects of it, though in a few, where there was but little debility, advantage was derived from its use. The following case will show that it may be used with advantage in the acute form, though this case was not connected with measles:

A child three years of age had apparently a good constitution, and, before the attack of cancrum oris, had evinced no evidence of bad health; but in June, 1846, a slough suddenly formed on the inner side of the upper lip, very near the left angle of the mouth. When the patient came under my notice, the gangrene had penetrated half way through the lip and was half an inch in diameter. I immediately applied solid nitrate of silver, taking care to make it reach the living substance beneath the slough; it was also applied to the surrounding mucous surface, so that a more active circulation might ensue. An emetic of ipecac. was then administered, followed by ten grains of jalap and one grain of calomel, which acted freely as a cathartic. Half a grain of quinine was now given every four hours for some time. At the end of three days the mortified parts dropped out, contrary to my expectations, and the cavity soon filled up with healthy granulations. Good health was reëstablished in ten days after the attack.

I now anticipated that if this child took the measles, which was then in the house, cancrum oris would almost certainly return, and the patient eventually fall a victim to it; but in this I was disappointed, for the child did take rubeola, went through it well, and had no return of the previous disease.

The favorable result of this case further demonstrates the advantage of vomiting and purging in all cases where the patient can bear them without producing much prostration.

The following instance will show how low a patient may become with cancrum oris and yet be susceptible of measles, and how certainly death follows such attacks. In this case the child would no doubt have succumbed even if it had not taken rubeola, yet a number of cases would have resulted favorably but for the joint influence of the two affections.

A boy aged four years was seized with diarrhea about the middle of May, 1846. On the 23d a slough had formed in the mucous membrane opposite the molar teeth of the right side, and on the 29th had begun around the superior incisors. Diarrhea still continued; to relieve this, I directed ten grains of ipecac. to be given, which did not produce emesis, but acted

as a cathartic. Hope's mixture was also directed, and by the 1st of June the diarrhea had much abated. The patient now took a grain of quinine every six hours for a number of days, and the bowels were kept sufficiently in check with Hope's mixture.

On the 3d and 4th the incisor teeth came out, the slough still spreading; the upper alveolar process was nearly black and bare throughout more than half of its extent. On the 6th there was no improvement of the periosteal appearances, and the soft parts had become worse. During the next three days there was no appreciable increase of the sloughing, but the inflammation of the periosteum had increased or spread farther. During this time the appetite continued good, or rather became better, which accounts for the stationary condition of the sloughing from the 6th to the 9th.

On the 10th he was doing well. On the 11th, the bone was still more bare; otherwise the mouth was more favorable. On the 15th the sloughing was worse, and the pulse too high and frequent; this seemed a little strange, as I had expected its force to be diminished; it was explained, however, by the appearance of the eruptive stage of measles next day, The patient survived only until the 18th.

The following case will show how measles altered the condition of cases which would in all probability have recovered if they had been suffered to run their course without the superaddition of this disease:

A girl aged eight years had symptoms of cancrum oris on the 1st of May, 1846. The disease gradually got worse until the 31st, when an ash-colored pedicle appeared on the mucous surface of the mouth, just over the masseter muscle. To relieve this, nitrate of silver was freely applied. Quinine had been given and was continued in half grain doses every few hours. On the 3d of June the slough did not look quite as well; the caustic was therefore again used, and the quinine was continued for some time, with a repetition of the nitrate of silver every other day. This course was pursued until the 9th with a happy effect, as the mouth had much improved

But on the 11th measles began to be manifested, and on the 14th the eruption was well out and of a good color. The caustic was now used with caution, and quinine entirely laid aside. The infusion of serpentaria was directed in order to keep out the eruption—a medicine which has had a happy effect in congestive measles. The other cheek now became affected and was solidified, and I feared that the slough which was forming on the inner side would penetrate the cheek. By the 17th the measles had disappeared, and the mouth was no worse. On the 18th the caustic was used, and on the 19th the mouth had slightly improved. The bowels, hitherto disordered, were now in a healthy state. During the 20th, 21st and 22d the appetite was good, but the ulcer was deeper in the cheek.

I concluded to try iodine, and prescribed it; but it soon disagreed with the stomach, or rather irritated the bowels. In giving this medicine after the disease had become so active, an error was committed, and I can scarcely tell in what way I came to make the prescription. Chloride of soda was directed, and had its usual and desired effect of destroying the fetor. Notwithstanding all that was done, the gangrene penetrated the lower lip on the right side. Before this took place, the cheek and lip swelled very much, and the lip assumed the dusky red color always preceding mortification. The patient survived until the 29th, and death did not take place until the right side of the upper lip had become involved in the mortification. During the illness of this patient the appetite in the general was good, and this decided me in the opinion for a long time that she would recover; but when measles supervened, I gave up the case as lost.

The following case will further show the influence that rubeola had in conducing to a fatal termination in cancrum oris, and will also demonstrate how this affection may be unfavorably influenced by cutaneous diseases of a chronic character:

N. Fisher, aged about four years, had porrigo up to the 5th of June, 1846, when it nearly disappeared. On the 10th the eruptive stage of measles was manifested, the eruption being

then of a good color; but on the 12th it became purple or nearly black. This disappeared, however, on the use of serpentaria, etc. No other unfavorable symptom occurred until the 28th, when sudden sloughing of the gums of the upper incisor process began most rapidly.

On the 29th sloughing of the gums of both the superior and inferior incisor teeth took place, with inflammation of the periosteum of the alveolar processes connected with those teeth. The gums were of course almost immediately separated from the teeth and processes, while the teeth became loose and began to drop out before the 2d of July, when the patient died.

I might cite other cases to prove that measles, taking hold of children who have recently been or are still laboring under chronic skin diseases, is apt to result unfavorably; but this would now be improper, except so far as these affections are connected with the disease under consideration; and in this experience has demonstrated that it is more apt, under these circumstances, to result in death, than where but one dermal affection exists during the invasion of cancrum oris.

It remains to consider the possibility of cure when the periosteum or bones are involved in this affection. I have seen no case recover where the alveolar process became denuded, and the periosteum black or dark colored. In all instances the periosteum took on a continuous inflammation, which extended so far that the soft parts eventually sloughed, and death soon followed. I treated a case, however, following measles, in 1846, of the character just spoken of, except that instead of attacking the alveoli, the bones of the nose became at least partially carious. The child, about five years old, was seized with rubeola, which went regularly through all its usual stages. Diarrhea supervened, however, towards the close of the eruptive recession, and the mucous surface of the mouth gave evidence of congestion and slight inflammation. But it was in the nasal organs that disease was seriously developed. The Schneiderian membrane began to inflame, and discharged much fetid pus having the appearance of diseased bones. The ozæna continued for weeks, the patient meantime laboring under slight diarrhea and rapid emaciation.

This case was treated with moderate but long continued doses of sulphate of quinine, and six drops of diluted fluid chloride of soda three or four times a day. Dover's powder and chalk were also occasionally given, but Hope's mixture was chiefly relied on to control the diarrhea.

After the general debility had partially subsided, taking the patient to the country frequently had the happiest effects. But although the general health constantly improved after the first month, the nose continued to discharge the same kind of unhealthy matter; so that within eight weeks after the attack of measles, the septum narium sank considerably, leaving the bridge of the nose without support below the ossa nasi, and caused some deformity. The child continued to improve notwithstanding this deformity, and was in good health in less than four months after the invasion of rubeola.

Were it necessary, I could cite another case at length, farther proving the point in question; but this is unnecessary. It may be proper to observe, however, that the periosteum of a limited portion of the occipital bone became carious after the close of the measles, and a morbid abscess formed, which, on being opened, discharged considerable unhealthy pus. The membranes of the brain became affected, a single convulsion supervened, and death immediately followed.

In taking a retrospective view of what has been said, it may not be improper to observe, that the mortality of May, June, and July, of 1846, was apparently much increased during those months by the intense heat of the weather, the two latter in particular. I frequently visited the house early in the day, with the hope of finding the little sufferers refreshed by the night, but was nearly always disappointed, and found, to my mortification, that they had farther traversed the thorny way of pain and weakness. During these months several rooms were occupied by the sick, which was of great moment, as at one time we had nineteen patients in bed, and for many days the number ranged between ten and twenty. Of this number a considerable proportion, as has been said, had cancrum oris, a majority of which cases proved fatal, and in most of them no remedial agent had any good effect. Like the

cholera or some of the forms of scarlatina, it bade defiance to our *art.*

The diet of the patients, when under treatment and during convalescence, has been of as substantial a kind as could be admitted; both animal and vegetable food have entered into it. In the acute forms of the disease, however, but few of the patients took any food, and often what was taken was rejected. Indeed, this inability to take food was one of the most alarming symptoms of the disease, either before or during the time of sloughing. On the contrary, when food could be taken with ease and relish, a lively hope might be indulged of eventual recovery. In the acute form, rice, sago, arrow-root and boiled bread and milk constituted almost the only food; sometimes a little soup was given in these cases. In the milder forms of the disease, animal food, with bread and milk and sometimes vegetables, was used in such quantities as could be easily borne.

In conclusion, it may not be improper to say that there has been but little tendency to cancrum oris for a number of months past. To what to attribute this I am at a loss. Possibly this malady may nearly disappear, and may again return, owing to the constitutional condition of the atmosphere. Its banishment may possibly be owing to a change in the culinary operations; indeed, the bread has been much better of late than formerly, and it is possibly true that other kinds of cookery have also been better, but this is only conjecture. I am not satisfied, however, that sour bread, which formerly was occasionally used, is injurious to even the health of children; yet I fear that it is not so favorable to digestion nor yet to the proper condition of the fluids as that which is destitute of acid fermentation.

Should the managers of the asylum construct rooms so that the children of the nursery can be removed every twelve hours from one to another, for the purpose of ventilation, etc. I should hope for much in the improvement of the health of the younger inmates.

May, 1847.

ART. II.—*Notes on Medical Matters and Medical Men in Paris.* By DAVID W. YANDELL, M.D., of Louisville, Ky.

It is my intention, at no very distant day, in a letter on the Physicians and Surgeons of Paris, to go somewhat into detail respecting a few of the most prominent of these, while at the same time I shall pass rapidly in review some of their peculiar doctrines. In this way, I fancy, more successfully than in any other, I shall be able to convey a correct idea, which, I must say, does not exist in the mind of every American physician, concerning the medical luminaries of the French capital. This, however, at another time; in the meanwhile I give you a report of one of the lectures of Prof. Bouillaud, one of the greatest of French physicians. Since it appears to me to be superior to anything I have yet seen on the subject—*Meningitis*—I propose to communicate it in full.

The disease, he remarked, the study of which we enter upon this morning, has been successively termed ataxic fever, brain fever, and arachnitis, but the name which seems to us best to express the characters of the affection is meningitis. True, it does sometimes occur that the arachnoid alone is diseased, its cavity containing serum or pus, or patches of pseudo-membrane of greater or less extent; but independently of these cases being extremely rare, it appears in the greater part of those that have been published, that the inflammation was not confined to the serous membrane. Moreover, the principal, at least, if not the exclusive seat of the inflammation is the cellular tissue underneath the arachnoid, that is to say, the pia mater. The dura mater participates in the inflammatory action only because of its contiguity and of a persistence of that action, it being only after a chronic inflammation that we discover the membrane thickened, degenerated, or covered by cartilaginous or osseous deposits. The bones of the cranium themselves may undergo alterations under such circumstances.

Meningitis may be general or partial, it being understood that we confine ourselves to cranial meningitis. In this we include that which affects the periphery of the hemispheres or their superior parts; that which affects the base of the brain, and finally, the meningitis which is seated in the ventricles alone. The inflammation may equally affect the periphery of the organ alone or the parietal surface of the meninges. M. Foville has particularly described the latter, which I may remark very rarely exists independently of inflammation of the other portions of the meninges. Its most frequent causes are external violence, as wounds and fractures of the back of the cranium.

Anatomical characters.—These do not differ essentially from those of inflammation in other parts of the body, excepting certain peculiarities which are offered by reason of the structure and properties peculiar to the affected tissues.

The first or acute period, betrays itself by a redness which may be immediately carried to so high a degree as to resemble a true sanguine effusion in the substance and on the surface of the tissues; but it is ordinarily more manifest beneath the arachnoid, in the folds of the pia mater. Most frequently, however, both the arachnoid and pia mater are only covered by a simple arborescence, or a more or less abundantly dotted appearance, while they are at the sametime turgescent and more or less tumefied. Nothing more is required than heat and pain to characterize inflammation such as we have described in a pathological point of view, but these are merely physiological phenomena which it is impossible to demonstrate after the death of the patient.

In this state of things the tissues actually lose their cohesion to such a degree that the pia mater and arachnoid, the choroid plexuses, and the membranes of the ventricles become extremely friable, being easily torn under the finger. This is what is designated under the generic name of *ramollissement*, and is entirely analogous, as to its mode of forma-

tion, to the *ramollissement* of the brain and parenchymatous organs.

At this period these membranes are sometimes covered by granulations, which, however, are seen more especially in chronic meningitis, or rather that particular form of the affection called tubercular meningitis. The surfaces of the arachnoid and of the ventricles are moistened and lubricated in the normal state, you are aware, by a serous liquid; but there does not exist, strictly speaking, any serum in their cavities, and when it is found it has been formed during the last moments of life. A secretion should be considered as the result of an inflammation only where the chemical properties of the fluid, serum for instance, are changed. Now, in the majority of cases, we find sometimes the arachnoidian cavity, sometimes that of the ventricles, distended by a considerable quantity of serum, still transparent, though somewhat less so than in the natural state, and a little more thick. Such is the true transition from the moment of the inflammatory state. It is the active dropsies which constitute a state of protophlogosis, if we may so speak, and which only require another degree to be added in order to become a true inflammation. The symptoms of this protophlogosis are in other respects identical with those of inflammation properly so called, which do not differ from the first except in the character of the secretion. Thus, in the one, we see a serous liquid, perhaps a little thickened, filling the ventricular and arachnoid cavities; whilst in the second this liquid is thicker, viscous, opaque, most frequently infiltrated beneath the arachnoid, in the meshes of the pia mater, when it presents itself under the demiconcrete form of gelatin. The arachnoid and the membranes of the ventricles seem to imbibe this liquid, and to owe to this imbibition their thickening and expansion, at the same time their cavities are filled with the liquid, in which case it generally happens that it eventually divides at the surface and cavity of the membranes into two parts, the one fluid and very limpid, the other flocculent, amorphous, and pulpy. Thus, although there is no great difference as to

the mode of formation of these two degrees of the same disease, they are extremely distinct if we view only their anatomical alterations. In fact the one, active dropsy, (protophlogosis) remains stationary and always furnishes an abundant liquid which does not vary, unless a new action, a greater intensity, is superadded which converts it into a true inflammation. This, on the contrary, furnishes a thick milk-like serum, which in the greater number of instances becomes readily converted into pseudo-membranes more or less dense; and these usually become so far organized as to be furrowed with reddish striæ, indicating the formation of new vessels. If the disease, instead of terminating abruptly in death, as most frequently it does, continues beyond three or five weeks, for example, the false membranes are perfectly organized, and make a sort of integral portion of the membranes of the arachnoid and ventricles; the inflammatory movement loses its intensity, the secreted liquid is produced less turbid, less thick, and more limpid; the effusion augments, and to the inflammotory succeeds a simple hypertrophic action, in so much that the secretion, now more abundant, retains all the characters that it had in the first instance.

M. Foville in his article on meningitis has spoken of false membranes lining all the cavity of the arachnoid, and which almost constituted a new cavity. We ourselves examined a very remarkable case of this kind last year. Leaving aside false membranes, it is probable that many cases of hydrocephalus have no other origin than this new cavity. We observe then, as after a dropsy, milky patches very thin and adherent to the internal surface of the serous membranes.

But these things do not always terminate in this way, and to the injection and thickening of the membranes, to the secretion which occurs in the first moments of meningitis, succeeds soon a more or less abundant suppuration. In certain cases we have found the pia mater steeped in a very consistent phlegmonous pus; occasionally both the internal surface of the arachnoid and the ventricles, according as either one or

the other of these parts have been the seat of the inflammation, are thus covered; and it is also frequently found beneath the arachnoid in the meshes of the pia mater, when its position may be exactly ascertained by pressing lightly upon the serous membranes, which will cause it to change its position beneath its envelop, the arachnoid.

Besides these anatomical lesions, there often supervene granulations more or less perfectly organized, true tubercles which occupy either the surface of the arachnoid or the substance of the pia mater itself, though these do not occur in all cases, but particularly, I may say almost exclusively, in lymphatic individuals who present also in the majority of instances tubercular peritonitis, as well as those pericardites and tuberculous pleurisies, that you will meet so often in practice.

We do not partake of the opinions of those writers, and they are many, who contend that these tubercles existed anterior to the inflammation of the meninges, which, in the end, they produce; we think, on the contrary, that they are constantly preceded by the inflammation which produces them, and when once developed, if this inflammation subsides, or is arrested in its march by any circumstance whatever, they (the tubercles) may exist for years without giving rise to any inflammation or producing any further anatomical alterations, just in the same way, for example, that granulations supervene on the valves of the heart in consequence of a violent and neglected endocarditis. Now what is the nature of these granulations, of these tubercles, that authors have but too superficially examined, and that they agree, without knowing why, to regard as a *sui generis* affection, the true generative cause of which they have never seemed to wish to recognize? This is a question which, in a pathological point of view, is as important as it is vast, since it naturally leads us to speak not only of tubercles of the meninges, but of tubercles in general. And the digression which I am about to make will not, I trust, be considered out of place. We do not hesitate to express ourselves on this subject in the most

positive manner. Let those who regard tubercles as something peculiar in their nature, or who do not believe that there exists any relation between inflammation and their production, be offended at our opinion; for us this opinion is not the less demonstrated, and it will certainly be so for all those who observe well. And first we lay down as a fact, that inflammation alone is the producing cause of tuberculous matter, in a word, of tubercles. Let us now add, that it is inflammation of the lymphatic system, of the lymphatic vessels, which determines the secretion, *sui generis*, it is true, which constitutes tuberculous lesions properly so called. The first support of our proposition is furnished by the fact, recognized and admitted on every hand, that of all individuals those among whom the lymphatic system predominates are the most subject to tubercles. Now if it is said that tubercles are a special disease developed idiopathically and primitively, and we are given as proof the transmission from father to son, in a hereditary manner, of the tuberculous diathesis; we reply without fear of being contradicted by sound observation, that it is by no means tubercles that are inherited, but rather the temperament predisposing to the tuberculous affection; the predisposing cause being, *par excellence*, the lymphatic temperament. Every one knows with how few exceptions all temperaments are hereditary. It is the same with tubercles as with inflammatory diseases properly so called, or the different organic diseases which are occasioned by them. These inflammatory diseases belong to sanguineous temperaments every one will allow; and certainly no one would be found bold enough to assert that pneumonia, for example, is a hereditary affection, though the temperament which predisposes to it is hereditary. But before the connexion which existed between chronic organic affections and the acute inflammations which precede them, was known positively as it is to-day, before it was known that these chronic organic maladies, like the anatomical lesions which charaterized them, were but the more or less perfectly trans-

formed and organized remains of an acute anterior inflammation; before this epoch, we say, what was the opinion entertained of these very alterations, and only to speak of a single organ, the heart, what was said of the cause of its diseases? Aneurism was regarded as one of the pretended hereditary affections precisely as are tubercles. Yet heirship was not esteemed the sole and only cause capable of engendering them, and the supporters of the doctrines admitted, perhaps compulsively, accidental causes in the same way that those who believe in the hereditary transmission of tubercles are also constrained, in certain cases, to admit that this mysterious germ may be developed spontaneously and accidentally, without knowing how or under what influences; but in the majority of instances under the influence of the lymphatic temperament.

Thus then, an individual with a more or less predominant lymphatic temperament is predisposed to tubercles, and is unfortunately very often attacked without having had tuberculous progenitors. Such in our opinion, is the predisposing cause, *par excellence*, nay, we would say almost the only one, of tuberculous disease.

We draw another support of this opinion from a large class of surgical diseases. Do we not daily see excoriations, wounds, contusions, in a word, traumatic lesions of every kind, followed by a more or less intense inflammation of the lymphatics comprised in the wound or its neighborhood, and by engorgement of the ganglia to which the intersected vessels extend? And when the first period of this adenitis has passed, if it has not been properly treated, the ganglia tuberculize and are transformed into masses of the best characterized tuberculous matter. We remember to have had a most striking example of this transformation in a patient who succumbed to a pleuro-pneumonia and an abundant albuminaria, in whom all the ganglia of the parotid and submaxillary regions formed a tumor almost as resisting as if it had been osseous, while its volume was nearly quadruple the natural size of the ganglia. Being incised it was found to

consist entirely of yellowish masses of a soft granular matter, resembling, save the color, a mixture of plaster previously dissolved in water, and commencing to solidify, studded with large granulations. Some points were completely softened, and yielded under pressure a white yellowish pus, offering the most distinct characters of soft tubercle or, in other words, of tuberculous pus. All the mesenteric ganglia indifferently presented the same degeneration.

If we see then in these external diseases tubercles developed, if we see them engendered by an incontestable inflammation of the ganglia and lymphatic vessels; if, finally, we see this tuberculization arise and progress step by step under our eyes, in the lymphatics of the external organs, we ask if we are not forced by the most pressing analogy and the most rational induction to admit, that it is not produced otherwise in the internal organs? Would that all the inductions that have been and will be made in medicine were as well founded as this; the science would progress much more rapidly; true principles would be much more numerous, and false principles fewer than they are, and an immense number of facts, isolated because they have been imperfectly studied, and badly studied because no one has dared lift the mysterious veil which envelops them, or rather which necessarily enveloped them when science was still in its infancy, would now be assimilated, classified, grouped, united and transformed into general laws. The great error of many persons consists in believing, by an inconceivable tendency to see on every hand mysteries and new prodigies, that nature acts in a thousand different ways, whilst, on the contrary, it is a fact which is confirmed by daily observation, and which you should never lose sight of, that nothing is more constant, more unerringly identical than the march and effects of a disease in the same tissue, in the same organ, or the same system of organs, if the disease, inflammation, for example, be left under the same natural influences to the hands of nature.

Finally, what are tubercles, and what the relation of cause and effect between tubercles and inflammation of the lymphatic vessels? Tuberculous matter is to inflammation of the lymphatic system what false membrane is to inflammation of the sanguineous system. Thus whenever an inflammation becomes general in the sanguine system it produces a peculiar *secretion*, an exudation from the internal membrane of the vessels. It is swept away by the blood in proportion as it is produced, either in part or wholly; and fibrin being added the blood then becomes more glutinous, coagulable, and plastic, as is shown by the buffy coat, which is a true organic germ, a veritable elementary tissue, only requiring to be grafted upon a living organ in order to become endowed with a life of its own.

The same thing, moreover, occurs in a large number of instances when poured out on the surface of the serous membranes, for example, or into the interstices of the cellular tissues by the capillaries, when it assumes the form of false membranes; and then if these are not absorbed by the force of nature alone, or by nature aided by therapeutic agents, they soon commence to become organized in a definite manner, to become vascular and to be transformed into true serous and fibrous membranes, which may themselves be changed at a later period, by virtue of a power of nutrition possessed by them, the mechanism of which escapes us, into cartilaginous, osseous, or osseo-calcareous matter.

You all know that in another degree of inflammation of the circulating system, and especially in local inflammations of this system, obliteration of the vessels is the result, both by the plastic matter exuded and the coagulation of the blood, and the clots are reduced in a short time to true fibrin. These are more or less adherent to the vascular parietes, and are themselves organized in a great number of instances, and as we have before remarked while speaking of false membranes, they occasionally finish by being transformed, and in certain cases by the continuation or the increase of the inflammato-

ry action, and especially in consequence of a phlebitis, they become, like the inflamed cellular tissue, the seat of very frequent suppuration.

Finally, when inflammation reaches the suppurative stage, an exudation, a purulent secretion, is immediately established in the capillary vessels, and we have then primitively these purulent effusions in the serous cavities which are not organizable, but true foreign bodies, which nature constantly endeavors to get rid of by means of absorption or otherwise. All that we have said relative to the products of inflammation of the circulatory system, may be repeated of the products of inflammation of the lymphatic system. Thus a coagulable liquid lymph circulates in the lymphatic vessels, as blood circulates in the blood vessels. Like the latter, the lymphatics, during the first degree of inflammation, especially when adhesive, exude from their internal surfaces a matter organizable like pseudo-membrane, and differing only very slightly from this in its nature, being tuberculous, the germ of tubercle which is identical with the coagulum of lymph. At a more advanced period, this matter becoming agglomerated, may obliterate the lymphatics, become organized and transformed, or suppurate precisely as the clots of blood which are in their nature identical with the pseudo-membranes secreted by the internal surfaces of the bloodvessels, and which like it (false membrane) may become organized or suppurate.

Finally, suppuration may also be established in the lymphatics in the same manner as in the capillaries, although the product, pus, may be somewhat different.

We are able to say now what these granulations are, these tubercles that are seen on the free surface of the peritoneum, pleura, pericardium, arachnoid, and in the meshes of the serous cellular tissue, as that of the pia mater, in the course of certain inflammations, and always from preference in lymphatic individuals. They are but the product of the exudation of the capillaries which participate in the inflammation, and which are so numerous in the serous membranes and the laminated tissues which line them. They are but the fellow,

the counterpart of the pseudo-membrane of the bloodvessels furnished by the lymphatic vessels. They, as it were, become organized and vascular, and engraft themselves and live in the same manner, and, playing no longer the part of foreign bodies, may sojourn many years without anything revealing their existence. Meanwhile, once organized, they have a separate existence, and live by themselves, on their own proper account.

These products of inflammation may, and too often do, become the seat of new inflammations, under whose influence they may suppurate. Such is tubercular softening in the greater number of instances. Again; these granulations may, like the pseudo-membranes, be transformed into fibrous, cartilaginous, or calcareous matter, in the course of which metamorphoses they may frequently become the cause of new inflammation in the organ which contains them, and as they were deposited by a previous inflammation, new inflammations in which these granulations themselves participate, fall into suppuration, etc.

After this long digression we return to our subject, and terminate our remarks on the anatomical characters of meningitis, concerning which we have little to add. The cerebral substance itself, in the immense majority of cases, participates in the inflammation of the meninges, either through contiguity or the continuity of the vessels. A more or less thick layer of the cortical substance is found more or less congested; sometimes it appears as if soaked in blood, while its consistence is perceptibly diminished, or in a word, it is softened. The white substance is equally congested, and presents when cut an abundantly dotted appearance, but any alteration of its cohesion is much more rarely observed, unless the inflammation had persisted sometime with considerable severity. But when the ventricular membrane is the seat of the disease the subjacent white substances, in the same manner as the gray substance covered by the pia mater, is always extremely congested, and in the majority of cases softened to a certain depth. What we have said of the partici-

pation of the cerebral substance in the inflammation of the meninges, is a fact which we could predict beforehand and without the aid of pathological anatomy; for how can we explain the delirium and the disorders of the intellect more or less profound in cerebral fever, by the existence, simply, of inflammation of the meninges?

Signs and Symptoms.—Meningitis, like other inflammations, gives rise to two orders of phenomena, the one being common to all inflammations, the other peculiar or proper to each. The common phenomena, you will readily understand, are denominated heat, redness, swelling, and pain. In the disease which occupies us, it is not possible, as it is in the external inflammations, to detect these phenomena in the diseased organs themselves, but they are translated to the exterior in a perfectly analogous manner. Thus in meningitis the face is animated and red, the eye brilliant and congested, pain often shows itself in a more or less intense general cephalalgia; this, however, is not always the case, for frequently it is localized in one or other portion of the head, it being usually referred by the patients to the forehead. To what is this cephalalgia to be attributed? We are far from saying that in certain cases the inflammation of the meninges is propagated to the substance of the brain, or even that the general congestion of this organ may not be the point of departure, but we are well convinced that in those cases which are most frequent—those where the pain occupies the frontal region—the cause consists either in participation in the inflammation, or the compression of some of the branches of the fifth pair of nerves which are distributed in this portion of the membranes of the brain, and which moreover are eminently sensitive. As to the tumefaction, it cannot be directly proved any more than the redness. The external heat, especially of the head and frontal region, is too evident to need mention here.

The signs proper to the affection are the following:—In the first period there exists a trouble, a disorder, an exaltation of the intellectual and moral faculties, which usually

produces a violent general delirium. Besides this, infants especially are seized with convulsive movements. In certain cases the muscles are in a state of general agitation and trembling; but in other circumstances these symptoms are replaced by rigidity and very great contraction of the muscular system. Trismus is also very frequently observed, and is a doubly grave symptom, especially when it manifests itself at the onset; first, because it announces a violent and rapid inflammation, not only of the meninges but also of the base of the brain, nervous centres, etc.; and secondly, because it is impossible to administer anything to the patients. At other times, instead of trismus, the jaws are seized with a trembling and very frequent grinding of the teeth. To all these symptoms is added an exaltation, either general or special, of sensibility. This you may easily verify by pinching very slightly or merely touching the patients, who become agitated, endeavor to change their position, and utter plaintive cries.

Concerning special sensibility the pupils are strongly contracted, and when you persist in speaking to the patient he attempts to withdraw himself from the noise which fatigues him, and of which he will often complain. In the second period, to these symptoms of exaltation of the intellectual faculties, of sensibility and of motion, which characterize the first period, soon succeeds a general comatose condition. Then, if the coma is not too intense, by questioning the patient in a very high voice and with a little perseverance, he recovers momentarily from this torpor, replies in a few words, ordinarily incoherent, and immediately relapses into the same state, which if carried very far gives place to what may be termed apparent death of the functions of relation.

The face alternates with redness and pallor; the features are shrunk and contracted, especially among children; in certain subjects the face assumes an idiotic expression; the dorsal decubitus is most common, and the members are usually extended without any movement or any species of contraction; though it occasionally happens that at the beginning of this

period the patients are still bent and drawn upon themselves. lying upon the side or back as during the contractions of the first period; but there is no longer any real contraction, and the limbs seem to remain in this state rather because they are incapable of extending themselves than because prevented by contraction. Cephalalgia very probably still persists in a high degree at this period and even until the fatal issue of the disease, as is evinced, among other things, by the patients, notwithstanding their coma, from time to time raising their hands mechanically towards their heads.

In certain subjects the end of the second period is characterized by subsultus tendinum, though this is not a constant phenomenon. The contraction of the pupils is a phenomenon belonging to the first period of meningitis, always coinciding with the exaltation of sensibility and general contraction, and as soon as compression of the nervous centres, or the extensive participation of the brain in the inflammation is manifested by the symptoms characteristic of the second period, somnolency, coma, etc., the pupils tend to dilate more and more. Independently of these symptoms, there are a few which should particularly fix your attention. Generally the pulse is much accelerated in the beginning of meningitis, varying from 96 to 120 and 130, this last figure being very rare; it is full and extremely resisting, except in feeble anemic patients. in whom we have found the pulse, when beating, from 96 to 100, soft, small, and but slightly resisting; it is rarely irregular and intermitting at the beginning, but its tendency is to become more and more rapid, and at the same time that it increases in frequency it becomes irregular and often intermitting. During the second period it most frequently beats from 120 to 130 times and even more, while it is small, filiform in certain cases, and not easily compressible. If in the course of a meningitis a momentary amendment occurs the pulse becomes slower, less irregular and intermittent, and gains in volume and fulness; but if to this calming of the pulse succeeds a slight acceleration, you are authorized to

pronounce a fatal prognosis, and from this moment the pulse, which at the beginning had been slightly accelerated and then somewhat slower, becomes extremely frequent, beating from 130 to 140, and in the last moments even beyond that. Those of you who were here last year had opportunities of observing, in our service, some cases of meningitis which offered very well marked characters. We should not omit saying that when, during the first period of meningitis, the convulsions and the subsultus tendinum are very frequent, in some extremely rare cases it becomes exceedingly difficult to ascertain with precision the state of the pulse. The general temperature is at the same time elevated, and acompanied by moisture or sweat over the surface of the whole body. This phenomenon is almost always present during the period of reaction and exaltation, and in our opinion, those are at fault who have referred to dryness of the skin as a constant symptom in this disease. True, dryness of the skin is remarked in meningitis at the same time that the general temperature is elevated; but it most generally accompanies the second period, and is almost uniformly present in chronic or sub-inflammatory meningitis which progresses slowly. It is also proper to say, that in certain lymphatic subjects, principally children, when that form of meningitis is observed which some pathologists regard as a special disease, that is, tubercular meningitis, the skin is almost constantly very dry, but the temperature is less elevated than in the others.

The breathing, always very frequent, sometimes reaches 28, 36, and even 40 respirations per minute, is sighing principally with children, and in the course of the disease these sighs are changed into true cries, which have been called hydrocephalic cries. This is a symptom which is met with more particularly in those cases of meningitis which are accompanied by considerable effusion of serum in the cavities of the ventricles and meninges, an effusion which shows itself in subjects where tuberculous granulations are developed in the substance of the membranes. Slackening of the res-

piration is equally seen, but it is due in many cases to the partial or general participation of the nervous centres in the inflammation.

The first phenomena manifested on the part of the digestive organs are anorexia, intense thirst in the beginning, coated tongue, and most generally vomiting. But this latter is often a delusive symptom, which you must mistrust, for it may lead you into error if the other symptoms that we have previously mentioned are not well marked, since it is met with in a number of circumstances, and might lead you to mistake a meningitis for a commencing gastric affection, when in fact the stomach was perfectly healthy. These vomitings or efforts to vomit are observed equally in erysipelas, especially of the scalp.

Alvine evacuations do not generally take place with the same facility, but it sometimes happens that they are passed involuntarily during slight convulsions. In the beginning of the disease the patients are occasionally seized with a diarrhea, though this symptom is not among the most frequent. During the second period, or that of coma, collapse, etc., the evacuations are no longer effected, so to speak; the rectum fills, and when it becomes distended the matter escapes involuntarily under the patient.

The urine is scanty, red, acid in the beginning, now and then depositing a brick-dust sediment; and in proportion as the disease draws near a fatal termination it becomes more and more scanty, and being no longer passed voluntarily the bladder becomes fuller and fuller, and the urine only escapes drop by drop. Many patients cannot pass it even in this way; be this as it may, catheterism is urgent in both cases. The urine is then alkaline. In the last stages of the disease the respiration often becomes more and more loud, then stertorous and laborious, when it very frequently happens that the patients suddenly succumb to a true asphyxia. This occurs principally in meningitis of the base. To this, the acute form, succeeds the slow chronic form, and it is in this variety that we see those numerous examples of insanity and

mental alienation, the causes and points of departure of which Foville, Colmiel, and others have so well described. Whenever physical and mental signs, such as those that characterize pneumonia, for example, cannot be obtained, and we are obliged to rely upon functional phenomena in order to support our diagnosis, which is the case in meningitis, differential diagnosis becomes of essential importance. Meningitis evinces itself, it is true, by certain local signs, as by the congested and animated state of the countenance, the engorgement and tearfulness of the eyes, the increased throbbing of the temporal arteries, etc., but as is proved by the numberless errors committed every day, these, in the majority of cases, are not sufficient. For instance, meningitis is often taken for typhoid fever of the ataxic form, and I may remark, in passing, that it is in these cases that some pretend to have seen typhoid fever without lesion of the glands of Peyer, and that some physicians attach only a slight importance to these alterations. Certainly, the ataxic state may be complicated with typhoid fever, but it is nothing more than a pure and simple complication, for these ataxic phenomena in no degree form an integral part of typhoid fever, and even if they did they are wanting in an immense number of instances, and particularly in our wards where the disease is not allowed to continue a sufficient length of time for the nervous centres to feel the influence of the general infection, whatever may be the manner in which this infection has been brought about.

The causes of meningitis are both various and different in their nature. For the sake of better studying them they have been divided into two classes, *predisposing* and *determining* causes. But, although this general division has been received, it was found necessary to make a third group which comprehends the sympathetic or reactional causes; for although these bear a certain analogy to the predisposing causes, the resemblance is not sufficiently close to allow of their being classed with them; while from those styled determining or exciting they differ very widely. Under these

circumstances we feel ourselves authorized to adopt another division, by which the causes of meningitis may be comprised under four heads, and by which the subdivisions may be determined with greater precision. It is this—1st. Direct causes. 2d. Indirect causes; which may be subdivided into 1st, Direct causes: *a.* those which act materially and are common to inflammation in general; *b.* those which are immaterial, if the expression may be allowed, or, in other words, moral or intellectual, affecting specifically the nervous centres and their appendages, which are the organs in question. 2d. Indirect causes: *a.* those which are only predisposing, such as age, sex, temperament, physiological conditions, such as food, drink, etc.; *b.* those operating sympathetically or by reaction, and which comprise certain morbid states, such as typhoid fever, erysipelas of the scalp or of the face, sometimes pneumonia of the summit of the lungs, etc. Let us now enter into details—

1st. *Direct Causes.*—*a.* Those which are material and common to inflammation in general. In this, you remark, we have included all traumatic lesions, such as profound contusions of the cranium, whether occasioning fracture with depression of the skull, or only violent commotion of the brain, wounds resulting from severe operations on the scalp and the like. Under this category also is embraced a too long exposure to the rays of a hot sun. This, it is well known, may occasion erythema or erysipelas, according as the heat has been more or less intense and continued; in the same manner it may determine meningitis, provided the head be sufficiently exposed. *b.* The different organs become inflamed under the influence of causes which act upon them in a specific manner; exciting food taken in large quantities and most of the mineral poisons, produce gastritis; but exposure to cold, pneumonia, rheumatism or coryza, and by the same law, intense moral affections, such as profound grief, extreme joy, prolonged vigils, immoderate mental labor, acting powerfully on the brain, are the most usual causes of

eningitis in adults, and particularly in young adults. It is ecessary to remark, however, that in this case the cerebral ubstance generally participates either primitively or consec- tively in the inflammation of its envelops.

2d. *Indirect Causes.—a.* Those which are only predispo- sing. The different periods of life are not liable to menin- gitis in the same degree. It is met with oftener before the ge of ten than from ten to twenty; during the latter period t occurs more frequently than in middle life, and as old age advances it becomes more and more rare. The influence of ge then upon the production of this disease is both great and easily proved; whereas in regard to sex the question is more difficult. M. M. Guersant and Foville assert, and they found their opinion on observation, that young girls are more sub- ject to meningitis than boys, and they attribute this to the *serre têtes* commonly worn by young females in France, a species of cap occasioning a continual and considerable cir- cular pressure upon the head.

By tables recently drawn up at the *Hôpital des Enfans*, and published in a special treatise, it appears from the article on meningitis, that girls are much less subject to this disor- der than boys. To what are we to attribute these discrep- ancies? We cannot here enter into details, but will simply say that the question requires further study, and that, even should the opinion of Guersant and Foville prevail, the ex- planation which they have given cannot be the true one; for how is it possible that a constriction, which at most is not very great, and which is exerted for four, five, or six years, should determine disease at a period when, taking into account the gradual development of the head, the organs must have become in some degree habituated to such com- pression? It seems much more logical and just to admit the influence of constitution and of temperament,—for it is well known that young girls and even adult females are generally more lymphatico-nervous than males. If we take this side of the question, then, we should say that lymphatic and ner- vous temperaments are more subject than any others to men-

ingitis. This explains to us on the one hand why it oftenest attacks infancy; and on the other, why that variety called granulous or tuberculous is almost peculiar to this epoch of life. Five children out of six are in fact more lymphatic than nervous, and we have already assumed that tubercular meningitis is the result of inflammation, and inflammation of the lymphatic system. And from these facts our opinion gathers new force and confirmation.

It is constantly observed that certain physiological conditions are real and frequent causes of meningitis. First and second dentition; the first appearance of the menses, or the sudden and complete suppression, in whatever way caused, of this periodical discharge, are each periods marked in numerous instances by the development of meningitis. These are by no means vague hypotheses to be repeated by medical authors merely because advanced by those who have preceded them, while they have had no means of assuring themselves of their truth; but facts, and what is still more weighty, groups of facts, the numerical tables given in special treatises, the exactitude of which we, ourselves, have had repeated opportunities of verifying,—these offer quite sufficient proof.

A highly stimulating diet continued for a length of time, and especially the abuse, sometimes made of spirituous liquors with the view of drowning mental suffering, are also causes, the action of which though less rapid and probably more remote, is not the less positive. You well know that excessive and protracted indulgence in spirituous liquors very commonly produces a variety of this disease, known as *meningite crapuleuse*, or delirium tremens, which is nothing more than a slow and chronic phlegmasia, of which you will always find palpable and material traces after death.

b. Sympathetic or *reactional causes.*—There are many diseases in the course of which meningitis is developed, or which, at least, become complicated by nervous symptoms. It is very often seen to supervene upon erysipelas of the scalp or face, either by sympathy (and here let us remark in passing, that this expression serves but to mask our ignorance of

the real nature and *modus operandi* of such causes) or by the inflammation being propagated to the covering of the brain through the orbital openings, or through the medium of the veins communicating between the scalp and sinuses of the dura mater. M. Foville has observed that it declares itself sympathetically in certain affections of the serous membranes; and he mentions having seen a case of hydrocele, operated for by puncture and injection, followed by inflammation of the synovial sacs, producing anchylosis of the involved articulation, and finally succeeded by all the rational signs of acute meningitis. We ourselves have had more than one example of inflammation of the membranes of the brain occurring as a coincidence of violent acute articular rheumatism. Happily, however, this coincidence is extremely rare. Sympathetic meningitis occurs very often in typhoid fever, not as an element of the latter affection, but as a complication, and it is to this variety that the name of *typhoid fever of the ataxic form* is applied. We here naturally ask whether there exists any mechanism by which it is possible for the affection of the glands of Peyer to react upon the brain and its coverings. We feel unwilling to pronounce too positively on this subject, but of this we are convinced, that a large proportion of the cases of meningitis regarded as typhoid are really idiopathic, and entirely independent of the intestinal lesion, having either preceded, or come on simultaneously with the affection of the glands of Peyer, in either case precisely as though the latter had not existed. However, we do not refuse altogether to admit that there is such a disease as real secondary meningitis, developed during the course and under the influence of typhoid fever; but instead of saying that it is produced by sympathy, by an imponderable cause, inappreciable by any of the senses, is it not more plausible and exact to say, that it is produced by poison, the typhoid element, the septic principle, which, diffused through the blood and the whole economy, acts upon the nervous centres and their appendages as matter acts upon matter? In either case it is very certain that in our service

where this general infection is prevented, the develop- of the ataxic phenomena of typhoid meningitis is prevented also, so that, in reality, they occur in our wards only as extremely rare exceptions.

The method which we have followed in describing the symptoms of meningitis sufficiently indicates its ordinary course, and we are saved the necessity of discussing this point in a special manner; a word, however, as regards its duration.

When the disease is really idiopathic and violent, it often carries off patients, especially infants, during the first week, at latest before the expiration of the second; and sometimes, so rapid is its progress, it removes the sufferers between the first and fourth days.

Slow nervous fever is but mild sympathetic meningitis, occurring with other affections.

The prognosis is generally grave, and the physician should carefully guard against allowing himself to be deceived by the lucid moments and intervals of calm which frequently occur, but which are so often and so quickly succeeded by renewed and more alarming paroxysms.

We now hasten to an important portion of our subject, namely, the treatment.

Treatment.—The treatment which answers best in meningitis is the antiphlogistic. In what manner should it be employed? We are able to affirm to you that the method of copious sanguine depletions is preferable to any other. But you must not believe that you will often obtain happy results from the first bloodletting; it is generally not till after the lapse of two or three days, during which you have insisted upon repeated bleedings, that you will see the disease yield, the delirium diminish, the fever subside, etc. And yet I must tell you, that in this inflammation the most energetic treatment most opportunely applied, is far from being attended by the same pleasing results furnished in phlegmasias of other organs. I would not be far from the truth in saying, that the most judiciously prescribed and vigorously

employed venesections will scarcely effect the cure of half the cases of meningitis which fall into your hands.

Of the thousand other remedies that have been proposed in this disease it is sufficient to remark, that they should not all be discarded; on the contrary, there are a few which may always be advantageously associated with sanguine emissions. Thus, to the best of antiphlogistics, that is to say, to bleeding, leeches, diluent drinks, cold drinks, ice employed internally and as a topical remedy; and to revulsives, those powerful adjuvants to the antiphlogistic treatment properly so called, that is to say, blisters, (camphorated in preference) applied to the inferior extremities or even to the scalp itself, which should be previously shaved,—to all these means, we say, you should add musk, camphor, castor, etc., which, incontestably, in a great number of cases, have produced favorable results. As to opium, or tartrate antimony, or sulphate of quinine, all of which have been used in meningitis, without dwelling here upon their inefficiency, or inconveniences, we will only say that in despair of the case, and in the absence of any good results from your other means, you may try them, provided you administer them with prudence and moderation.

In enumerating the antiphlogistic agents which you may, and which you even must use, we omitted to mention one in every respect worthy of recommendation, the effects of which in a number of cases have been, so to express ourselves, powerful. You need scarcely be told that we allude to cold affusions. They should be frequent, repeated, and carefully and opportunely combined with the means previously enumerated. Guersant and Foville extol these *bains d'affusion* very highly, and make great use of them, but they differ as to the period of the disease when they should be employed. M. Guersant very seldom prescribes them until the accidents of the first period have given place to drowsiness and coma; and we have derived good effects under similar circumstances. M. Foville, on the contrary, thinks that they should be employed as the principal remedy from the

commencement of the disease, bleeding, leeches, and other means being conjoined merely as adjuvants.

But, to close our remarks, meningitis is one of those diseases in the treatment of which you must arm yourself with courage and perseverance, and act with energy. Happy are you when you have time to bring to bear against this disease all the powerful means possessed by the art; for there are cases of meningitis (occurring in children particularly) that may be called frightful: that in the space of twenty-four or thirty-six hours carry off the patients before you have had time to do more than choose your weapons.

At a late meeting of the Academy of Sciences, Dr. Lesauvage presented a memoir entitled "*Physical considerations on Small-pox and its Treatment.*" The author insists principally upon the necessity of resorting in the first moments of the disease to the antiphlogistic method. He reported many cases in which the application of this plan had been followed by complete success while in the same hospital and during the same epidemic, other patients with whom sanguine emissions were not practised died of acute cerebritis. M. Lesauvage is far from considering cauterization of the pustules unimportant; but he believes that this practice, the principal result of which is to prevent the disease from leaving its traces, and which contributes at the same time to moderate the secondary fever, would be, in the majority of cases, insufficient to induce a happy termination. He thinks, moreover, that most frequently the antiphlogistic treatment when employed in time and without timidity, is adequate to prevent the deforming cicatrices which are so often left on the face by variola treated according to the ancient method.

I have more than once alluded to the fact that Dr. Brooks, a young physician from Boston, is here preparing himself for teaching in the United States Veterinary Surgery. He was in Paris prosecuting the study of medicine when he heard, that the Agricultural Society of Massachusetts had offered

four hundred dollars, *per annum*, for two years, to any one who would spend that time in the Veterinary school at Alfort, preparatory to teaching veterinary medicine in Boston. With a commendable zeal he offered himself for the undertaking, and now for twelve months has been most assiduously engaged fitting himself for the duty. The result of this effort, it is hoped, may be the establishment, by the Commonwealth of Massachusetts, of a school of veterinary medicine. The Agricultural Society has been fortunate in securing the services of an individual of the zeal manifested by Dr. Brooks in the enterprise, and who at the same time is possessed of so much talent for carrying it into effect. With my next letter I shall have the pleasure of presenting you with an interesting communication from Dr. B. on the subject.

As medical reform is a subject much talked of in our country, I will report something in my next concerning the medical reform bill which is soon to come up in the French House of Peers. For the present I will not trespass longer upon the patience of your readers.

Paris, May 30th, 1847.

REVIEWS.

ART. III.—*Expériences Relative aux Effets de l'Inhalation de l'Ether Sulphurique sur le Système Nerveux.* Par F. A. LONGET; Professeur d'Anatomie et de Physiologie, etc., etc. Mémoire lu à l'Académie Royale de Médecine. Victor Masson, Paris, 1847. pp. 54; 8vo.

Experiments relative to the Effects of the Inhalation of Sulphuric Ether on the Nervous System. Read to the Royal Academy of Medicine. By F. A. LONGET, &c., &c.

This publication, for which we are indebted to the kindness of our Paris correspondent, is the first systematic and sustained attempt that we have seen to explain the action of Sulphuric Ether—Letheon—on the animal economy. The author has an established reputation as a writer on the anatomy and physiology of the nervous system, and may be supposed to be peculiarly fitted for an investigation like the present. We have read this paper with a good deal of interest, and shall proceed to give a short account of it.

Longet first inquires whether animals submitted to the inhalation of ether had merely a concentration of the peripheric sensibility in the centres of the nervous system; or whether those portions of the cerebro-spinal axis, sensible to the ordinary means of excitation, lost their sensibility like the nervous cords themselves.

The following fact was already known to him. In an animal recently killed the motor principle forsakes first the encephalon, next the spinal marrow, then the nerves from the central towards the muscular extremities, or in a centrifugal direction; whilst the sensory principal is lost in a centripetal

direction. In other words, sensibility first disappears in the smaller branches of the nerves, then in the larger, in the nerves themselves, in the posterior spinal roots (lumbar, dorsal, cervical) and gradually in the posterior bundles of the spinal marrow (lumbar, dorsal, cervical) ascending towards the encephalic centres.

The knowledge of this fact led the author to suppose that, in the peculiar ebriety produced by sulphuric ether, the parts of the cerebro-spinal axis ordinarily sensible might be so still, even though the nerves themselves might be absolutely insensible. But experiment did not bear him out; for this absolute insensibility was found *as well in all the central as in all the peripheral portions of the nervous system.* Even the electric current, the most energetic of all known stimulants, failed to reveal the existence of sensation in any part of the sensitive nervous apparatus. It is well known that, applied to the optic nerve of an animal at the point of death, it causes a luminous sensation indicated by motions of the iris: but in an animal under the influence of ether it does not produce this effect.

In the healthy state, according to the views of the author, the *great nervous centres* exhibit sensibility in the following points: the posterior portions of the varolian bridge and of the rachidian bulb, the quadrigeminal tubercles at a certain depth, and the posterior bundles of the spinal marrow. In the *peripheral nervous system*, the ganglionic portions of the trigeminal, glosso-pharyngeal, and pneumo-gastric nerves, and the posterior roots of the spinal nerves.

Inasmuch as the sensory principle follows an ascending or centripetal course in its progressive extinction, it is evident that it must abandon last the posterior portions of the varolian bridge and the rachidian bulb; at a certain period of the experiment it does in fact abandon them, *and yet the animal continues to breathe and to live, so as to recover subsequently all its faculties.* This persistence of respiration with a bulb in a state of anæsthesia is frequently met with by the pathologist. It is seen in the moribund and the apoplectic, where

the bulb, no longer transmitting either sensitive impressions, or cerebral action on the voluntary muscles, still acts as the "primary motor of the respiratory mechanism." The special seat of this respiratory influence, according to Longet, is not in the entire thickness of the bulb, but in the bundle intermediate between the pyramidal and the restiform bodies. These may be cut without affecting the respiration; but the destruction of the intermediate bundle alone, at the same level, instantaneously suspends that function. This intermediate portion is not exclusively formed of white fibres, like the remainder of the cord, but includes a considerable amount of greyish matter; and so long as this retains its integrity, the respiratory movements are maintained.

As to the *motor nervous apparatus*, though generally disordered and depressed in its action as shown by the muscular relaxation in man, it still responds to galvanic irritation in the etherized animal; and indeed the normal relations between muscular contraction and the direction of the electric current, are still present. The excitability of the anterior bundles of the spinal marrow, of the anterior spinal roots, and of the motor nerves of the cranium, in the etherized animal, may be seen also after death on applying the electric current; but it does not continue so long as in cases where death has has been produced from some other cause.

An animal then under the influence of ether only loses temporarily, in consequence of profound but transient modifications of its encephalon, the power of executing *spontaneous* movements; but it cannot be said that the inciting motor principle, the *motor nervous force* properly so called, is at any time completely absent from any portion whatever of the motor nervous apparatus.

Strychnine and the preparations of opium possess the singular property of exaggerating or increasing the excito-motory or reflex power of the medulla oblongata; ether, on the contrary, acts in a manner precisely the reverse, and rapidly suspends this *proper spinal action.* For example, winking, which follows direct stimulation of the mucous membrane of

the eye, and which is seen in animals just before death, and even some instants after death, does not occur in such as are rendered insensible by the inhalation of ether; and the most energetic irritants applied to the mucous membrane of the pharynx, excites neither movements of deglutition nor concomitant closure of the glottis. The reflex action of the medulla oblongata is absolutely suspended.

The senisibility of the pharynx and glottis being suspended, difficulty may arise from the flow of blood into the air passages during operations in the throat and nasal cavities. The *possibility* of such an occurrence had already been suggested, and though a small number of such operations may have been performed without untoward results, there is nothing in them which can give security for the future. When the quantity of blood is small, the danger pointed out may be at its minimum, or even have no existence; for the epiglottis in the erect position forms on the anterior wall of the pharynx, when the latter is at rest, a projection sufficient to turn aside from the superior opening of the glottis a small quantity of liquid, by dividing the stream into two columns, and directing these into the two lateral fossæ of the posterior wall of the larynx. If the blood flows along the posterior or lateral wall of the pharynx, it may also avoid the superior opening of the respiratory organs. Still in an operation on the parts indicated, attended with a great flow of blood, the patient at the same time not being allowed to lie down, the danger would really be very great; for in his experiments on animals under the influence of ether it has frequently happened to the author to asphyxiate them almost instantly by pouring into the mouth, without precipitation, the same quantity of water that passed easily in animals of the same kind whose pharynx was acting normally.

There would be great rashness in giving a patient, completely under the influence of ether, a large quantity of water to drink.

In general the observer can determine in what order the central parts of the nervous system of animals are affected

by the ether; and Longet thinks that we possess in it the means of *isolating the seat of general sensibility from that of intelligence and will.* In the animals (dogs and rabbits) which were the subjects of his experiments, he has distinguished two periods, viz:

In the first, the animal no longer able to sustain itself, falls upon its side, and is agitated, grows sleepy, and soon becoming unconscious of the external world, no longer executes any spontaneous movements, and remains plunged in a profound sleep; still, it throws itself about, and gives utterance to cries, when any sensible portion of the body is strongly pinched, but does not awake so as to offer any efficient resistance to this external violence. This is the *period of etherization of the cerebral lobes*, and even of the other parts of the encephalic mass, except the varolian bridge and rachidian bulb.

In the second, the animal having inhaled the ether for a longer time, no longer cries out, moves, or feels anything, even when the most sensitive portions of the nervous system are subjected to tractions and laceration. This is the *period of etherization of the varolian bridge*, the effects of which are associated with the preceding.

Now to prove that these variations in the phenomena are produced by the ether's affecting the designated portions of the brain:—If the encephalon of rabbits or dogs be mutilated *so as to leave only the varolian bridge and the bulb in the cavity of the cranium*, the animals, though apparently in a state of profound coma, will still, under severe external irritation, utter plaintive cries, and agitate themselves violently, *just as those who have undergone etherization of the cerebral lobes only.* But, if the varolian bridge is deeply injured, the moaning and agitation consequent on severe pinching immediately cease; there is left merely an animal in which the circulation, the respiration, and the other nutritive functions continue for a short time; and this animal, having lost its *perceptive centre of tactile impressions*, must, in a physiological point of view,

be compared to that which has reached the *period of etherization of the varolian bridge*, or of absolute insensibility.

The foregoing observations are not without a practical bearing.

Certain patients, whilst undergoing operations, cry out violently, withdraw the limbs abruptly, and present the ordinary signs of suffering; but on coming to themselves, affirm that they do not know what has been done to them, that they recollect nothing, and have experienced no painful impression. The influence of the ether has been limited to the *lobes of the cerebrum*, and these persons are in a situation analogous to that of the animals deprived of the cerebral lobes but retaining still the annular protuberance, or the seat of perception of tactile impressions. Has the man, or the animal, in the cases referred to, had any real suffering? The author answers in the affirmative, and thinks that memory alone is wanting.

Assuredly, he says, there is no memory unless there has been perception; but memory is not necessarily present every time that a perception has existed. A man during sleep changes his position, turns back and forth without falling from his narrow couch, and tosses himself about violently if the integuments are stimulated; it is not to be supposed that he is absolutely deprived of sensations; and, because the perception of them has not been altogether distinct, because he does not recollect them, it does not follow that he has not had them. In the mid state between sleep and waking, how many ideas traverse our brain, and escape us the next moment?

Certainly, if the word *sensation* be taken in its strict metaphysical acceptation, and applied only to the exercise of sensibility with *consciousness*, it will be granted that the annular protuberance as the seat of sensibility, and the cerebral lobes as the seat of intelligence, must necessarily place their activity in common and concur to the same act.

But, strictly speaking, cannot the physiologist be allowed to distinguish the simple *perception* of tactile impressions, from the attention that is accorded to them, and the aptitude

to form ideas in relation with them? Attention and the ulterior formation of ideas are subordinate to the participation of the cerebral lobes, the loss or etherization of which may bring on stupor, without abolishing the exercise of general sensibility, which is immediately subordinate to the varolian bridge. Admitting that the latter may, by itself (*isolèment*), act as the *centre of perceptivity*, the brain properly so called (the cerebral lobes) is nevertheless to be considered as the organ of essential elaboration, where tactile sensations in particular are appreciated, so to speak, at their just value, where they take a distinct form; as the organ consequently which is the seat of memory, the faculty by means of which it supplies the animal with the materials of its judgments and determinations, &c.

But the author furnishes some comparative experiments on this point. He laid bare the sciatic nerve in three animals, after having carefully concealed the remainder of their bodies from the sight of the observers. The three nerves were successively and repeatedly pinched, and each time there was great agitation, and outcries equally plaintive on the part of each of the animals. The unanimous opinion was, that suffering existed beyond doubt in each of the three cases. Now of these animals, the first was etherized to the first degree (*etherization of the cerebral lobes*); the second retained of its encephalon only the annular protuberance and the bulb; the third was altogether intact save the wound in the thigh. The second was subjected to further mutilation in the removal of the varolian bridge, and though it continued to live and breathe, it remained quiet, making no moan when the scalpel or the forceps was applied to the most sensitive regions. In the first the inhalation of ether was carried a little further, to the point of *etherization of the varolian bridge*, and the same absolute insensibility supervened. The varolian bridge is therefore indispensable to the exercise of general sensibility; it represents the primary perceptive centre of tactile impressions which are elaborated in an-

other organ; and ether is a preventive of pain only on condition of its acting on this part of the brain.

It may be said that if patients lose the memory of pain it is quite the same as if they had not experienced any. But this assertion is not sustainable; for if it be admitted that the patients in the foregoing cases really suffered, the shock to the constitution must have been quite as great as if the operation had been performed under ordinary circumstances.

The physiological condition of the *great sympathetic* undergoes some modification in animals that have inhaled ether. The vermicular motions of the intestines immediately after death have appeared to the author to be less active, and of shorter duration, than in animals killed by section of the rachidian bulb. The pulsations of the heart have likewise appeared to be less energetic and of shorter duration. It must not be supposed, however, that these organic movements suffer abatement during life; for observation goes to show that their speedier cessation after death may depend on their temporary exaltation during the life of the animal. The pulse, in fact, is observed to increase in frequency during the first moment of an experiment, then it abates, though still above the healthy standard; if the experiment is prolonged so as to endanger life, the cardiac contractions again become hurried and more numerous. As to the intestines, it is not unusual, in dogs put to sleep by ether, to see slight alvine evacuations, which in this case cannot be attributed to fright, but doubtless depend on the increased contraction of the alimentary canal. In man, at the moment of waking, copious vomiting has been observed.

We find no experiments here as to the effects of ether on uterine contraction; but reference is made to a paper on this subject submitted to the Academy by Dubois. We believe some portions of this paper have found their way into our Journal, under the head of Selections. Dubois points out, among other things, the contraction of the abdominal muscles which persists along with uterine contraction when all

the remaining voluntary muscles are in a state of relaxation.

Longet explains this by reference to the rachidian bulb, which plays such a part in this paper. It is the "first motor of the respiratory mechanism." Upon it depends the maintenance of the respiratory movements—the dilatation of the nostrils or of the mouth, the opening of the glottis, the elevation of the ribs and shoulders, the contraction of the diaphragm and *abdominal muscles*, but only as muscles concurring in the act of respiration. Now, straining, or *nisus*, in general, and that of labor in particular, is but a modification, a transient change of the respiratory act; it is a state in which the muscles of the ribs and shoulders, the diaphragm, and the abdominal muscles must contract with energy; in which, also, according to Isidore Bourdon and J. Cloquet, the glottis is spasmodically closed; and in which many other muscles contract by virtue of a synergie of action. In etherization, though volition is absent, yet under the influence of the bulb all the muscles concerned in respiration continue to act, and of course any *nisus* resulting from the contraction of these muscles, including the abdominal, may also be produced. This, though oftenest under the influence of the will, may take place without it; as is seen in a certain period of labor, and sometimes in lithotomy or lithotrity, where contraction of the uterus or the bladder irresistibly induces contraction of the abdominal muscles and the diaphragm.

The perineum, which, according to Dubois partakes of the general muscular relaxation in the parturient female, does not belong to the muscular apparatus of respiration; and in the involuntary *nisus* of labor, being passive, it is depressed under the weight of the abdominal viscera. But in voluntary *nisus*, or straining, the muscles of the perineum contract like many other muscles *not directly influenced by the respiratory nervous centres*, merely by virtue of that synergie to to which reference has already been made.

We have noticed a few of what seemed to us the most in-

teresting portions of this memoir, but as many things have been passed over, we quote entire the following propositions in which Longet makes a summary of the whole:

1. In etherized animals there is an absolute and temporary suspension of sensibility, as well in all the ordinarily sensitive parts of the cerebro-spinal axis (*posterior portions of the varolian bridge, of the bulb, of the spinal marrow, &c.*) as in the nervous cords themselves (*nerves of the members, posterior spinal roots, trigeminal nerve, &c.*)

2. The relation which normally exists between the direction of the electric current and the muscular contractions due to this current—a relation made known by Matteucci and myself—remains in the motor nervous apparatus (*nerves of the members, anterior spinal roots, anterior cords of the spinal marrow, &c.*)

3. However, by means of galvanism, it is shown that after death the irritability of the muscles and the excitability of the nerves of motion do not continue so long in animals killed by ether as in those dead from some other cause, from section of the bulb for example.

4. Every mixed nerve (*sciatic, &c.*) which, exposed in a part of its course and subjected to the action of ether, has become insensible at the point directly etherized and at all those that are below it, may nevertheless continue *excitable* by galvanism at the same points, and, on certain conditions, may in part preserve its voluntary motor faculty.

5. Electrical or mechanical irritation of the optic nerve, which, even in an animal almost dead, causes a luminous sensation indicated by the motion of the pupils, does not produce the least effect in an animal rendered insensible by ether.

6. The action of ether on the sensitive nervous apparatus is far more direct and stupefying than that of alcohol, which merely renders sensibility more obtuse, without ever entirely suspending it, at least in the nervous centres.

7. Ether abolishes, temporarily but completely, the excito-

motory or *reflex* property of the spinal marrow and the medulla oblongata (*proper spinal action*), and consequently acts inversely as strychnine and the preparations of opium, which exalt it.

8. In animals submitted to experiment, the effect of ether on the excito-motory function of the spinal marrow may be lessened or even neutralized by strychnine, and those of strychnine by ether.

9. The functions of the encephalic centres are constantly suspended before the proper spinal action, and are renewed before it.

10. Ether furnishes a new means of experimental analysis, which, employed with discretion, enables us to isolate, in a living animal, the seat of general sensibility from that of intelligence and of will.

11. The action of ether upon the nervous centres in living animals, may be regulated, and the two periods which I have called *period of etherization of the cerebral lobes*, and *period of etherization of the varolian bridge*, produced at will.

12. These two periods are easily reproduced by mutilations of the brain in living animals: in an animal which retains only the varolian bridge and the bulb, the phenomena correspond to etherization of the cerebral lobes; in one where the varolian bridge itself has been directly injured, they correspond to etherization of this part.

13. Ether does not constitute a preventive of pain unless it acts on the varolian bridge.

14. In animals that have undergone etherization of the varolian bridge, this organ always recovers its function of perceptive centre of tactile impressions, before becoming again a sensible organ.

15. The progress of the phenomena of etherization is far from being rigorously the same in man as in animals.

16. The dis-etherization of the varolian bridge may begin, even whilst the influence is still felt by the cerebral lobes; which accounts for the cries uttered towards the end

of an operation begun in a state of the utmost tranquillity—cries of which the patient retains no memory on waking.

17. The *true surgical period* corresponds to that of *etherization of the varolian bridge*, or of absolute insensibility.

18. A short time after the power of feeling has returned in etherized animals, there is a transient exaltation of sensibility.

19. Ammonia, either liquid or in the state of vapor, has appeared to me in a certain number of cases to shorten the duration of the phenomena arising from etherization; but only when these phenomena had not yet reached our second period.

20. At a certain period of the experiments, the blood, as first seen by Amussat, and subsequently by myself, becomes almost black in the arteries; *but insensibility invariably precedes this phenomenon.*

21. If the inspiration of ether, of the same quality, is continued after absolute insensibility occurs, the animals (rabbits) die in from six to twelve minutes, the temperature being from 6° to 8° Cent.

22. On the contrary, if there is a larger quantity of atmospheric air mixed with the ether, the period of absolute insensibility may be kept up for a very long time (three-quarters of an hour and more) without endangering the life of the animals (rabbits).

23. Ether, injected into the stomach through the œsophagus (even in sufficient quantity to prove fatal) does not cause loss of sensibility whilst vitality remains in the animal.

24. In etherization the functions of the ganglionic system of nerves seem to be sur-excited; this system apparently becoming a sort of *diverticulum* for the nervous force which has temporarily abandoned the cerebro-spinal system.

25. The death of animals that have inhaled too much ether is perhaps owing to a sort of asphyxia, the starting point of which would be especially in the respiratory nervous centre itself.

SELECTIONS

FROM

AMERICAN AND FOREIGN JOURNALS.

Code of Medical Ethics—Submitted by Drs. Bell, Hays, Emerson, Morris, Dunn, Clark, and Arnold, to the late Medical Convention, Philadelphia.

CHAPTER I.

Of the Duties of Physicians to their Patients and of the Obligations of Patients to their Physicians.

ART. 1.—*Duties of Physicians to their Patients.*

§1. A physician should not only be ever ready to obey the calls of the sick, but his mind ought also to be imbued with the greatness of his mission, and the responsibility he habitually incurs in its discharge. Those obligations are the more deep and abiding, because there is no tribunal other than his own conscience, to adjudge penalties for carelessness or neglect. Physicians should, therefore, minister to the sick with due impressions of the importance of their office; reflecting that the ease, the health, and the lives of those committed to their charge, depend on their skill, attention and fidelity. They should study, also, in their deportment, so to unite *tenderness* with *steadiness*, and *condescension* with *authority*, as to inspire the minds of their patients with gratitude, respect, and confidence.

§2. Every case committed to the charge of a physician should be treated with attention, steadiness and humanity. Reasonable indulgence should be granted to the mental imbecility and caprices of the sick. Secrecy and delicacy, when required by peculiar circumstances, should be strictly observed; and the familiar and confidential intercourse to which the faculty are admitted in their professional visits, should be used with discretion, and with the most scrupulous regard to fidelity and honor. The obligations of secrecy on the part of the physician to his patients, extends beyond the period of his professional services; none of the privacies of personal and domestic life, no infirmity of disposition or flaw of character observed during professional attendance, should ever be divulged by him except when he is compelled to do so by imperative circumstances. The force and necessity of this obligation are indeed so great, that professional men have, under certain circumstances, been protected in their observance of secrecy, by courts of justice.

§3. Frequent visits to the sick are in general requisite, since they enable the physician to arrive at a more perfect knowledge of the disease,—to meet promptly every change which may occur, and also tend to preserve the confidence of the patient. But unnecessary visits are to be avoided, as they give useless anxiety to the patient, tend to diminish the authority of the physician, and expose him to be suspected of interested motives.

§4. A physician should not be forward to make gloomy prognostications; because they savor of empiricism, by magnifying the importance of his services in the treatment or cure of the disease. But he should not fail, on proper occasions, to give to the friends of the patient timely notice of danger, when it really occurs; and even to the patient himself, if absolutely necessary. This office, however, is so peculiarly alarming, when executed by him, that it ought to be declined whenever it can be assigned to any other person of sufficient judgment and delicacy. For the physician should be the minister of hope and comfort to the sick; that, by such cordials to the drooping spirit, he may smooth the bed of death, revive expiring life, and counteract the depressing influence of those maladies which often disturb the tranquillity of the most resigned in their last moments. The life of a sick person can be shortened not only by acts, but also by the words or the manner of the physician, and that most unintentionally on his part. It is therefore a sacred duty to

guard himself carefully in this respect, and to avoid all things which have a tendency to discourage the patient and to depress his spirits.

§5. A physician ought not to abandon a patient because the case is deemed incurable; for his attendance may continue to be highly useful to the patient, and comforting to the relatives around him, even in the last period of a fatal malady, by obviating despair, by alleviating pain and other symptoms, and by soothing mental anguish. To decline attendance, under such circumstances, would be sacrificing, to fanciful delicacy and mistaken liberality, that moral duty, which is independent of, and far superior to all pecuniary appreciation.

§6. Consultations should be promoted in difficult or protracted cases, as they give rise to confidence, energy, and more enlarged views in practice.

§7. The opportunity which a physician not unfrequently enjoys of promoting and strengthening the good resolutions of his patients, suffering under the consequences of vicious conduct, ought never to be neglected. And his councils, or even remonstrances, will give satisfaction, not disgust, if they be conducted with politeness, and evince a genuine love of virtue, accompanied by a sincere interest in the welfare of the person to whom they are addressed.

Art. II.—*Obligations of Patients to their Physicians.*

§1. The members of the medical profession, upon whom is enjoined the performance of so many important and arduous duties towards the community, and who are required to make so many sacrifices of comfort, ease and health, for the welfare of those who employ them, certainly have a right to require and expect, that their patients should entertain a due sense of the reciprocal duties which they owe to their medical attendants.

§2. The first duty of a patient is, to select no person as his medical adviser, who has not received a regular professional education. In no trade or occupation do mankind rely on the skill of a self-taught artist, while in medicine, confessedly the most difficult and intricate of the sciences, the world appears to think that knowledge may be intuitive.

§3. Patients should prefer a physician whose habits of life are regular, and who is not devoted to company, pleasure, or to any pursuit incompatible with his professional obligations. A patient should also confide the care of himself and

family as much as possible to one physician, for a medical man who has become acquainted with the peculiarities of constitution, habits, and predispositions of those he attends, is more likely to be successful in his treatment, than one who sees them for the first time. A patient who has thus selected his physician should always apply for advice in what may appear to him trivial cases, for the most fatal results often supervene on the slightest accidents. It is of still more importance that he should apply for assistance in the forming stage of violent diseases; it is to a neglect of this precept that medicine owes much of the uncertainty and imperfection with which it has been reproached.

§4. Patients should faithfully and unreservedly communicate to their physician the history of the cause of their disease. This is the more important, as many diseases of a mental origin simulate those depending on external causes, and yet are only to be cured by ministering to the mind diseased. A patient should never be afraid of thus making his physician his friend and adviser; he should always bear in mind that a medical man is under the strongest obligations of secrecy. Even the female sex should never allow feelings of shame or delicacy to prevent their disclosing the seat, symptoms, and causes of complaints peculiar to them. However commendable delicacy of mind may be in the common occurrences of life, its strict observance in medicine may often be attended with the most serious consequences, and a patient sink under a painful and loathsome disease, which might have been readily prevented had timely intimation been given to the physician.

§5. A patient should never weary his physician with a tedious detail of events or matters not appertaining to his disease. Even as relates to his actual symptoms, he will convey much more real information by giving clear answers to interrogatories, than by the most minute account of his own framing. Neither should he obtrude the details of his business nor the history of his family concerns.

§6. The obedience of a patient to the prescriptions of his physician should be prompt and implicit. He should never permit his own crude opinions, as to their fitness, to influence his attention to them. A failure in one particular may render an otherwise judicious treatment dangerous, and even fatal. This remark is equally applicable to diet, drink, and exercise. As patients become convalescent they are very apt to suppose that the rules prescribed for them may be disregard-

ed, and the consequence but too often, is a relapse. Patients should never allow themselves to be persuaded to take any medicine whatever, that may be recommended to them by the self-constituted doctors and doctresses, who are to be met with in almost every family, and who pretend to possess infallible remedies for the cure of every disease. However simple one of their prescritions may be, it often happens that they contravene the plan of treatment adopted by the physician.

§7. A patient should, if possible, avoid even the *friendly visits of a physician* who is not attending him—and when he does receive them, he should never converse with him on the subject of his disease, as an observation may be made. without any intention of interference, which may destroy his confidence in the course he is pursuing, and induce him to neglect the directions prescribed to him. A patient should never send for a consulting physician without the express consent of his own medical attendant. It is of great importance that physicians should act in concert, for although each of their modes of treatment may be attended with equal success when employed singly, yet conjointly they are very likely to be productive of disastrous results.

§8. When a patient wishes to dismiss his physician, justice and common courtesy require that he should declare his reasons for so doing.

§9. A patient should always send for his physician in the morning, when the first attack of his disease has not been in a subsequent part of the day. By a physician being aware of the visits he has to pay during the day, he is able to apportion his time in such a manner as to prevent a clashing of engagements. A patient should also avoid calling on a medical adviser unnecessarily during the hours devoted to meals or sleep. He should always be in readiness to receive the visits of his physician, as the detention of a few minutes is often of serious inconvenience to him.

§10. A patient should, after his recovery, entertain a just and enduring sense of the value of the services rendered him by his physician, for these are of such a character, that no mere pecuniary acknowledgement can repay or cancel them.

CHAPTER II.

Of the Duties of Physicians to each other and to the Profession at large.

ART. I.—*Duties for the support of Professional Character.*

§1. Every individual, on entering the profession, as he becomes thereby entitled to its privileges and immunities, incurs an obligation to exert his best abilities to maintain its dignity and honor, to exalt its standing, and extend the bounds of its usefulness. He should therefore observe strictly, such laws as are instituted for the government of its members;—should avoid all contumelious and sarcastic remarks relative to the faculty, as a body, and while, by unwearied diligence, he resorts to every honorable means of enriching the science, he should entertain due respect for his seniors, who have, by their labors, brought it to the elevated condition in which he finds it.

§2. There is no profession, from the members of which greater purity of character, and a higher standard of moral excellence are exacted, than the medical man; and to attain such eminence, is a duty every physician owes alike to his profession, and to his patients. It is due to the latter, as without it he cannot command their respect and confidence, and to both, because no scientific attainments can compensate for the want of correct moral principles. It is also incumbent upon the faculty to be temperate in all things, for the practice of physic requires the unremitting exercise of a clear and vigorous understanding: and on emergencies, for which no professional man should be unprepared, a steady hand, an acute eye, and an unclouded head, may be essential to the well-being, and even to the life, of a fellow-creature.

§3. It is derogatory to the dignity of the profession to resort to public advertisements, or private cards or handbills, inviting the attention of individuals affected with particular diseases, publicly offering advice and medicine to the poor gratis, promising radical cures, publishing cases and operations in the daily prints, or suffering such publication to be made, or inviting laymen to be present at operations; boasting of cures and remedies; adducing certificates of skill and success, or to any other similar acts. These are the ordinary practices of empirics, and are highly reprehensible in a regular physician.

§4. Equally derogatory to professional character is it, for

a physician to hold a patent for any surgical instrument, or medicine; or to dispense a secret nostrum, whether it be the composition or exclusive property of himself, or of others. For, if such nostrum be of real efficacy, any concealment regarding it is inconsistent with beneficence and professional liberality; and, if mystery alone give it value and importance, such craft implies either disgraceful ignorance, or fraudulent avarice. It is also reprehensible for physicians to give certificates attesting the efficacy of patent or secret medicines, or in any way to promote the use of them.

ART. II.—*Professional services of physicians to each other.*

§1. All practitioners of medicine, their wives and children, while under the paternal care, are entitled to the gratuitous services of any one or more of the faculty residing near them, whose assistance may be desired. A physician afflicted with disease, is usually an incompetent judge of his own case; and the natural anxiety and solicitude which he experiences at the sickness of a wife, a child, or any one who by the ties of consanguinity is rendered peculiarly dear to him, tends to obscure his judgment, and produce timidity and irresoluion in his practice. Under such circumstances, medical men are peculiarly dependent upon each other, and kind offices and professional aid should always be cheerfully and gratuitously afforded. Visits should not be obtruded officiously; as such unasked civility may give rise to embarrassment, or interfere with that choice, on which confidence depends. But, if a distant member of the faculty, whose circumstances are affluent, request attendance, and a pecuniary acknowledgement be offered, it should not be declined, for no obligation ought to be imposed, which the party would rather compensate than contract.

ART. III.—*Of the Duties of Physicians as respects Vicarious Offices.*

§1. The affairs of life, the pursuit of health, and the various accidents and contingencies to which a medical man is peculiarly exposed, sometimes require him temporarily to withdraw from his duties to his patients, and to request some of his professional brethren to officiate for him. This is an act of courtesy, and should always be performed with the utmost consideration for the interest and character of the

family physician, and when exercised for a short period, all the pecuniary obligations for such services should accrue to him. But if a member of the profession neglect his business in quest of pleasure and amusement, he cannot be considered as entitled to the advantages of the frequent and long-continued exercise of this fraternal courtesy, without awarding to the physician who officiates the fees arising from the discharge of his professional duties.

In obstetrical and important surgical cases, which give rise to unusual fatigue, anxiety, and responsibility, it is just that the fees accruing therefrom should be awarded to the physician who officiates.

ART. IV.—*Of the Duties of Physicians in regard to Consultations.*

§1. A regular medical education furnishes the only presumptive evidence of professional abilites and acquirements, and ought to be the only acknowledged right of an individual to the exercise and honors of his profession. Nevertheless, as in consultations the good of the patient is the sole object in view, and is often dependent on personal confidence, no intelligent regular practitioner, who has a license to practice from some medical board of known and acknowledged respectability, recognized by this association, and who is in good moral and professional standing in the place in which he resides, should be fastidiously excluded from fellowship, but his aid should be received in consultation when it is requested by the patient. But no one can be considered as a regular practitioner, or a fit associate in consultations, whose practice is based on an exclusive dogma, to the rejection of the accumulated experience of the profession, and of the aids actually furnished by anatomy, physiology, pathology, and organic chemistry.

§2. In consultations no rivalship or jealousy should be indulged; candor, probity, and all due respect should be exercised towards the physician having charge of the case.

§3. In consultations it should be the province of the attending physician first to propose the necessary questions to the sick; after which the gentleman called in should have the opportunity to make such farther inquiries of the patient as may be necessary to satisfy him of the true character of the case. Both physicians should then retire to a private place for deliberation; and the physician first in attendance should communicate the directions agreed upon to the pa-

tient or attendants, as well as any opinions which it may be thought proper to express. But no statement or discussion of it should take place before the patient or his friends, except in the presence of all the faculty attending, and by their common consent, and no *opinions* or *prognostications* should be delivered, which are not the result of previous deliberation and concurrence.

§4. In consultations, the physician in attendance should deliver his opinion first; and when there are several consulting, they should deliver their opinions in the order in which they have been called in. No decision, however, should restrain the attending physician from making such variations in the mode of treatment, as any subsequent unexpected change in the character of the case may demand. But such variation and the reasons for it ought to be carefully detailed at the next meeting in consultation. The same privilege belongs also to the consulting physician if he is sent for in an emergency, when the regular attendant is out of the way, and similar explanations must be made by him, at the next consultation.

§5. The utmost punctuality should be observed in the visits of the faculty when they are to hold consultation together, and this is generally practicable, for society has been considerate enough to allow the plea of a professional engagement to take precedence of all others, and to be an ample reason for the relinquishment of any present occupation. But as professional engagements may sometimes interfere and delay one of the parties, the physician who first arrives shoul wait for his associate a reasonable period, after which the consultation should be considered as postponed to a new appointment. If it be the attending physician who is present, he will of course see the patient and prescribe; but if it be the consulting one he should retire, except in case of emergency, or when he has been called from a considerable distance, in which latter case he may examine the patient and give his opinion in *writing* and *under seal*, to be delivered to his associate on his arrival.

§6. In consultations, theoretical discussions should be avoided, as occasioning perplexity and loss of time. For there may be much diversity of opinion concerning speculative points, with perfect agreement in those modes of practice which are founded, not on hypothesis, but on experience and observation.

§7. All discussions in consultation should be held as secret and confidential. Neither by words nor manner should any

of the parties to a consultation assert or insinuate, that any part of the treatment pursued did not receive his assent. The responsibility must be equally divided between the physicians, and also the credit of success as well as the blame of failure.

§8. Should an irreconcilable diversity of opinion occur when several individuals are called upon to consult together, the majority should be considered as decisive; but if the numbers be equal on each side, then the decision should rest with the attending physician. It may, moreover, sometimes happen, that two physicians cannot agree in their views of the nature of a case, and the treatment to be pursued. This is a circumstance much to be deplored, and should always be avoided if possible, by mutual concessions, as far as they can be justified by a conscientious regard for the dictates of judgment. But in the event of its occurrence, a third should if practicable, be called to act as umpire, and if circumstances prevent the adoption of this course, it must be left to the patient, to select the physician in whom he is most willing to confide. But as every physician relies upon the rectitude of his judgment, he should, when left in the minority, politely and consistently retire from any further deliberation in the consultation, or a participation in the management of the case.

§9. As circumstances sometimes occur to render a *special consultation* desirable, when the continued attendance of another physician might be objectionable to the patient, the member of the faculty whose assistance is required in such cases, should sedulously guard against all future unsolicited attendance. As such consultations require an extraordinary portion both of time and attention, at least a double honorarium may be reasonably expected.

§10. A physician who is called upon to consult, should observe the most honorable and scrupulous regard for the character and standing of the practitioner in attendance; his practice, if necessary, should be justified as far as it can be, consistently with a conscientious regard for truth and honesty, and no hint or insinuation should be thrown out, which could impair the confidence reposed in him, or affect his reputation. He should also carefully refrain from any of those extraordinary attentions or assiduities, which are too often practiced by the dishonest for the base purpose of gaining applause, or ingratiating themselves into the favor of families and individuals.

Art. V.—*Duties of Physicians in cases of interference.*

§1. Medicine is a liberal profession, and those admitted into its ranks should found their expectations of practice upon the extent of their qualifications, not on intrigue or artifice.

§2. A physician, in his intercourse with a patient under the care of another practitioner, should observe the strictest caution and reserve. No meddling inquiries should be made; no disingenuous hints given relative to the nature and treatment of his disorder; nor any course of conduct pursued that may directly or indirectly tend to diminish the trust reposed in the physician employed.

§3. The same circumspection and reserve should be observed, when, from motives of business or friendship, a physician is prompted to visit an individual who is under the direction of another practitioner. Indeed, such visits should be avoided, except under peculiar circumstances, and when they are made, no particular inquires should be instituted relative to the nature of the disease, or the remedies employed, but the topics of conversation should be as foreign to the case as circumstances will admit.

§4. A physician ought not to take charge of, or prescribe for a patient who has recently been under the care of another member of the faculty in the same illness, except in cases of sudden emergency, unless it be in consultation with the gentleman previously in attendance, or the latter has relinquished the case, or been regularly notified that his services are no longer desired. Under such circumstances no unjust and illiberal insinuations should be thrown out in relation to the conduct or practice previously pursued, which should be justified as far as candor and regard for truth and probity will permit; for it often happens, that patients become dissatisfied when they do not experience immediate relief, and, as many diseases are naturally protracted, the want of success, in the first stage of treatment, affords no evidence of a lack of professional knowledge and skill.

§5. When a physician is called to an urgent case, because the family attendant is not at hand, the care of the patient ought to be resigned to the latter as soon as his attendance can be obtained, unless assistance in consultation be desired.

§6. It often happens, in cases of sudden illness, or of recent accidents and injuries, owing to the alarm and anxiety of friends, that a number of physicians are simultaneously sent for. Under these circumstances courtesy should assign the

patient to the first who arrives, who should select from those present any additional assitance that he may deem necessary. In all such cases, however, the individual who officiates, should request the family physician, if there be one, to be called, and on his arrival, should resign the case to him, unless his further attendance be requested.

§7. If a physician be called to the patient of another practitioner, in consequence of the sickness or absence of the latter, he ought, on the return or recovery of the former, with the consent of the patient, to surrender the case.

§8. A physician, when visiting a sick person in the country, may be desired to see a neighboring patient, who is under the regular direction of another physician, in consequence of some sudden change or aggravation of symptoms. The conduct to be pursued on such an occasion is to give advice adapted to present circumstances; to interfere no farther than is absolutely necessary with the general plan of treatment; to assume no future direction, unless it be expressly desired; and in this case, to request an immediate consultation with the practitioner antecedently employed.

§9. A wealthy physician should not give advice *gratis* to the affluent; because it is an injury to his professional brethren. The office of a physician can never be supported as an exclusively beneficent one; and it is defrauding, in some degree, the common funds for its support, when fees are dispensed with, which might justly be claimed.

§10. When a physician who has been engaged to attend a case of midwifery is absent, and another is sent for, if delivery is accomplished during the attendance of the latter, he shall be entitled to the fee, but shall resign the patient to the practitioner first engaged.

Art. VI.—*Of difference between Physicians.*

§1. A diversity of opinion, and opposition of interest, may in the medical, as in other professions, sometimes occasion controversy and even contention. Whenever such cases unfortunately occur, and cannot be immediately terminated they should be referred to the arbitration of a snfficient number of physicians, or *a court medical.*

And as peculiar reserve must be maintained by physicians towards the public, in regard to professional matters, and as there exist numerous points in medical ethics and etiquette through which the feelings of medical men may be painfully assailed in their intercorse with each other, and which can-

not be understood or appreciated by general society, neither the subject matter of such differences nor the adjudication of the arbitrators should be made public, as such publicity may be personally injurious to the individuals concerned, and can hardly fail to bring discredit on the faculty.

Art. VII.—*Of Pecuniary Acknowledgments.*

§1. Some general rule should be adopted by the faculty, in every town or district, relative to the pecuniary acknowledgments from their patients; and it should be deemed a point of honor to adhere to this rule with as much steadiness as varying circumstances will admit.

CHAPTER III.

Of the Duties of the Profession to the Public, and of the Obligations of the Public to the Profession.

Art. I.—*Duties of the Profession to the Public.*

§1. As good citizens, it is the duty of physicians to be ever vigilant for the welfare of the community, sustaining its institutions and burdens, and in addition they should be ever ready to give counsel to the public in relation to matters especially appertaining to their profession, as on subjects of medical police, public hygiène, and legal medicine. It is their province to enlighten the public in regard to quarantine regulations, the location, arrangement, and dietaries of hospitals, asylums, schools, prisons, and similar institutions; in relation to medical police of towns, as drainage, ventilation, &c., and in regard to measures for the prevention of epidemic and contagious diseases; and when pestilence prevails, it is their duty to face the danger, and to continue their labors for the alleviation of the suffering, even at the jeopardy of their own lives.

§2. Medical men should also be always ready, when called on by the legally constituted authorities, to enlighten coroners' inquests and courts of justice on subjects strictly medical—such as involve questions relating to sanity, legitimacy, murder by poisons or other violent means, and in regard to the various other subjects embraced in the science of Medical Jurisprudence. But in these cases, and especially where they are required to make a post-mortem examination, it is just, in consequence of the time, labor, and skill required, and the responsibility and risk he incurs, that the public should award him a proper gratuity.

§3. There is no profession by the members of which eleemosynary services are more liberally dispensed than the

medical, but justice requires that some limits should be placed to the demands for them. Poverty, professional brotherhood, and certain public duties, referred to in §1 of this chapter, should always be recognized claims for gratuitous services; but neither institutions endowed by the public or by rich individuals, societies for mutual benefit, the insurance of lives or for analogous purposes, or any profession or occupation, can be admitted to possess such prerogative. Nor can it be justly expected of physicians to furnish certificates of inability to serve on juries, to perform militia duty, or to testify to the state of health of persons wishing to insure their lives, obtain pensions, or the like, without pecuniary acknowledgment. But to individuals in straitened circumstances, professional services should always be cheerfully and freely accorded.

§4. It is the duty of physicians, who are frequent witnesses of the enormities committed by quackery, and the injury to health, and even destruction of life caused by the use of quack medicines, to enlighten the public on these subjects, to expose the injuries sustained by the unwary from the devices and pretensions of artful empirics and imposters. Physicians ought to use all the influence which they may possess as professors in Colleges of Pharmacy, and as having the option, in a great measure, of the shops to which they send their prescriptions, to discourage druggists and apothecaries from vending quack or secret medicines, or from being in any way engaged in their manufacture and sale.

Art. II.—*Obligations of the Public to Physicians.*

§1. The benefits accruing to the public directly and indirectly from the active and unwearied beneficence of the profession, are so numerous and important, that physicians are justly entitled to every consideration and respect from the community. The public ought likewise to entertain a just appreciation of medical qualifications;—to make a proper discrimination between true science and the assumptions of ignorance and empiricism—to afford every encouragement and facility for the acquisition of medical education,—and no longer to allow the statute books to exhibit the anomaly of exacting knowledge from physicians, under liability to heavy penalties, and of making them obnoxious to punishment for resorting to the only means of obtaining it.

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NEW SERIES.—VOL. VIII.—NO. II.

LOUISVILLE, AUGUST 1, 1847.

HEALTH OF THE CITY.

For some time past quite an unusual tendency to bowel complaints has been manifest among the adult part of our population. In a majority of cases the disease has been simple diarrhea, but in not a few it has been complicated with dysenteric symptoms, and in one which came under our observation, it assumed the character of congestive fever. We saw the patient, a little girl, as she was recovering from the second chill, and have never met with a case of this fever more distinctly marked.

Our experience in this endemic has been most emphatically in favor of *ice*, which has been allowed to our patients in every instance when it was desired. We have lately noticed in the journals a recommendation of ice in the treatment of dysentery. In the Transylvania Journal, (vol. ix, p. 240,) we reported some cases of that disease, in which ice and effervescing draughts produced the happiest effects, and, ever since, our practice has been to gratify the cravings of our patients for ice and iced drinks, in all forms of gastric and intestinal disease. During the excessively hot weather of the present season we have repeatedly witnessed the most pleasing results from this practice both in children and adults. Called to a patient troubled with sick stomach, before giving any medicine, our

invariable rule has been to prescribe ice, until the gastric symptoms were relieved, and not a case has yet come under our notice in which it failed to afford marked and almost immediate relief. Thus premised, a few doses of calomel have been found sufficient in most instances to relieve the complaint. Quinine, of course, is prescribed when the case exhibits a periodic character.

The weather has been dry for three months, and for several days about the middle of July, the thermometer rose as high as 92 deg. in the shade. Fever has not prevailed up to this time. A year ago the case was very different. After an unusually wet season, chills were universal in the suburbs of the city, and these continued to recur occasionally until a late period in the spring. No chills are now heard of in quarters where they were so prevalent last summer.

IMPROVED WATER-PUMP.

As having a direct and important bearing upon *hygiéne*, we would call the attention of our readers to an improvement made by an enterprising and ingenious citizen of Louisville in the water-pump. This pump combines the *forcing* with the *suction* principle, and is capable of elevating water from a cistern or even a deep well to the top of an ordinary two-story building. It is thus invaluable not only in case of fire, against which it may be used as a fire-engine, but also for the purpose of supplying water for bathing in any apartment of the house. This pump has been fully tested in Louisville, and is superseding all others. So indispensable is an abundant supply of cold water to health and comfort, that we feel secure of the thanks of our readers for this notice, which will lead many of them to avail themselves of a truly valuable invention. The manufacturer is Mr. Chapman Warner.

GEOLOGICAL SURVEY.

A corps of geologists has been appointed by government to survey the mineral lands authorized by Congress to be brought into market in the northern part of Wisconsin and the new territory of Minesota. Of this learned body, David Dale Owen, M.D., of New Harmony, is chief; and J. G. Norwood, M.D., of Madison,

B. F. Shumard, M.D., of Louisville, Col. Charles Whittelsey, of Ohio, Prof. Randall, of Cincinnati, and Mr. B. C. Macy, of New York, are his assistants. We look forward to the results of this enterprize of government with great interest. Reports will be made to Congress from time to time, and in the experience and learning of Dr. Owen, and the ability of his co-laborers, the public have a guaranty that the work will be faithfully and skilfully performed. Our young friend, Dr. Shumard, has been toiling assiduously for years past in this interesting department of science, and hitherto without reward or encouragement. He is now in a field where his fine talents will be developed and exhibited, and he has before him a career in which he will win distinction. The service in which he is engaged is expected to continue for several years.

ADULTERATIONS IN MEDICINE.

Prof. Lewis C. Beck has published a volume of upwards of three hundred pages on this subject, intended as a manual for the physician, the apothecary, and the artisan. He exhibits the adulterations to which the various substances used in medicine are subject, and describes the processes by which they may be detected. The processes given are for the most part so simple that the tyro in chemistry may apply them; but in every case this is not possible, and in casting his eye over these pages the student will be impressed with the importance of acquiring a somewhat more perfect knowledge of chemical science than falls to the lot of too many students of medicine. The utility of a work of this character will appear to every one, and it will be admitted by his brethren that the task of preparing it could not have fallen to abler hands than Dr. Beck's.

MURPHY'S PARTURITION.

We have received from the publishers, at New York, Messrs. S. & W. Wood, to whom we are indebted for the work of Dr. Beck just referred to, a copy of the admirable Lectures of Prof. Murphy, of the London University, on "Natural and Difficult Parturition."

At present we have only room to speak of the volume in general terms, but we shall avail ourselves of the earliest opportunity to notice it at the length to which its merits entitle it. The many favorable notices of the work by English critics which we have seen, induced a strong desire to see an early edition of it brought before the American profession. That desire has been fulfilled, and we have no doubt the work will become as popular in this country as the author is himself, as a practitioner and gentleman, at home.

LENGTH OF LECTURE TERMS.

One of the recommendations of the late Medical Convention was, that the sessions of our medical schools should be extended from four months to six. From their advertisement, just sent abroad, we see that the Medical Faculty of the University of Pennsylvania have accepted this proposition so far as to commence the session on the 18th of October and continue it to the end of March. It is proper that the oldest medical school in the country should thus take the lead in this matter, and it may be expected that the other schools will follow her example. Perhaps so great an extension as two months would not be advisable at once, but it may be brought about gradually, so as in a few years to establish six months as the duration of the course. When this comes to be the case, we may hope that students will go to the schools with a larger stock of patience, and be able to hold out for at least the four months which they have professed heretofore to give to lectures. As it is now, too many are contented with three months attendance, and not a few run away at the end of the second. We have heard of some, in times past, who were "armed and equipped" with lancet and drugs, and, sign-board painted, were ready to take a boat by the 8th of January, "the world all before them where to choose." This has been one of the sins against which medical teachers have hitherto in vain lifted up their voices. A lengthened term will do something towards correcting it; an enlightened public sentiment would do much more.

PROCEEDINGS OF THE NATIONAL MEDICAL CONVENTION.

The proceedings of both Conventions—that which sat in New York, and that recently held in Philadelphia—are given in this report, of which a copy has been for some days on our table. We have transferred to our pages one of the most interesting of the reports adopted by the Convention and given in the Appendix to this volume—that on MEDICAL ETHICS, and cannot too strongly recommend it to the perusal of our readers. Every physician in the land ought to be in possession of a copy of this report, and it would be well if the substance of it could be lodged in the mind of every man who may have occasion for the services of a physician. Ignorance or disregard of the observances insisted upon in this document leads to countless bickerings among the members of the profession, and if the labors of the Convention should result in nothing more than the general, honest adoption of this code, that will be an object worthy of the united efforts of the profession. It is due to Dr. Hays to make an explanation with which he accompanied the report. It will be remarked by the reader that the language in various passages is that with which he has met before in other codes of ethics. On examining a great number of such codes Dr. H. found that they were all based on that by Dr. Percival, and that the phrases of this writer were preserved, to a considerable extent, in all of them. He deemed it better to pursue a similar course, and has carefully preserved the words of Percival whenever they convey the precepts it was wished to inculcate. Some of the sections will be recognised as the precepts of Dr. Rush, and a few sentences are from other writers.

The third report in these proceedings is "on the standard of acquirements which should be exacted of young men before being received as students of medicine." The authors of this report recommend that, besides having a good moral character, every young man proposing to study medicine should have "a good English education, a knowledge of Natural Philosophy and the Elementary Mathematical Sciences, including Geometry and Algebra; and such an acquaintance, at least, with the Latin and Greek languages as will enable them to appreciate the technical language of medicine, and read and write prescriptions."

We shall not stop now to discuss this proposition. In the ab-

stract, we see nothing in it particularly to object to. It is desirable that students of medicine should be prepared by some previous training, and the course recommended by the committee is probably not too extensive. But is to be borne in mind that not a few eminent physicians, themselves scholars, have declared against the utility of the Latin and Greek languages as a part of the education of medical men. Latin prescriptions, we may hope, in half a century more, will be universally abandoned, and so far as relates to reading and writing them the necessity of this tongue will not be urged. Still, there must be some preparatory course of study, if we are ever to see an educated faculty in our country, and the standard of the committee may as well be held up before the eyes of our medical youth. It may be a long time before the exaction can be successfully made, but it is time that something higher than the present requisitions should be thought of and attempted. The public mind must be enlightened touching the importance of an educated profession, and from the profession itself the light must emanate.

MEDICAL DEPARTMENT OF THE UNIVERSITY OF LOUISVILLE.

The reader will not fail to note the circular of the Dean of the Medical Faculty of the University of Louisville, on the cover of the present number of our Journal. We understand that the gentlemen of the Faculty are looking forward to a large class in the ensuing autumn, and from the general prosperity of the country we see no reason why the medical schools generally should not attract good classes.

For the information of students, we will only add, that courses of lectures will be delivered in the months of September and October by Drs. Yandell, Cobb, Gross, and Bayless, on Chemistry, Anatomy, Surgery, and Obstetrics. These lectures will commence on the first Monday in September.

POSTAGE ON THIS JOURNAL.

Our attention has been called to an error committed by the printer on the cover of two back numbers of this Journal respecting its postage. The error is corrected in the present number. The postage on such periodicals for the first ounce is two-and-a-half cents, and one cent for each additional ounce.

THE

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CONTENTS

OF NO. III.

ORIGINAL COMMUNICATIONS.

ESSAYS AND CASES.

ART. I.—Notes on Medical Matters and Medical Men in Paris. By DAVID W. YANDELL, M.D., of Louisville, Ky. 185

ART. II.—The Black Death in Florence, translated from the Italian of Boccacio. By WM. M. BOLING, M.D., of Montgomery, Alabama 209

ART. III.—A Case of Vesico-Vaginal Fistula remedied by Caustic. By ELAM W. HARRIS, M.D., of Elm Wood, Cape Girardeau county, Missouri.....217

ART. IV.—A Case of Delirium Tremens induced by the inordinate Use of Tobacco. By WM. A. GORDON, M.D., of Harrisburg, Missouri.....219

REVIEWS.

ART. V.—Observations on Aneurism, and its Treatment by Compression. By O'BRIEN BELLINGHAM, M. D., Edin.; Fellow of and Professor in the School of the Royal College of Surgeons in Ireland; Licentiate of the Royal College of Edinburgh, and one of the Surgeons to St. Vincent's Hospital. London: John Churchill. 1847.....221

SELECTIONS FROM AMERICAN AND FOREIGN JOURNALS.

Observations on Dysmenorrhœa.....245
On the Varieties of Headache.....250
On Latent Pneumonia.....252
Variola, Vaccinia, Varioloid, and Varicella.....253

Treatment of Epistaxis by Insufflations of Alum 254
Comparative Utility of the Bromide and Iodide of Potassium, in the Treatment of Secondary and Tertiary forms of Syphilis...254
Effects of Sudden Changes of Temperature.....257
Pathology and Treatment of Croup.....258
Ship Fever in Canada.....260
Munificence of the King of Prussia for Medical Services.....262
Method of Administering Quinine.....262

ORIGINAL INTELLIGENCE.

Traveling Letters from the Senior Editor.....263, 270
Medical Reform 274
On the Varieties of Headache.....275
Ranking's Half-Yearly Abstract.....276
Law Department of the University of Louisville.....276
Medical Changes and Appointments.....276